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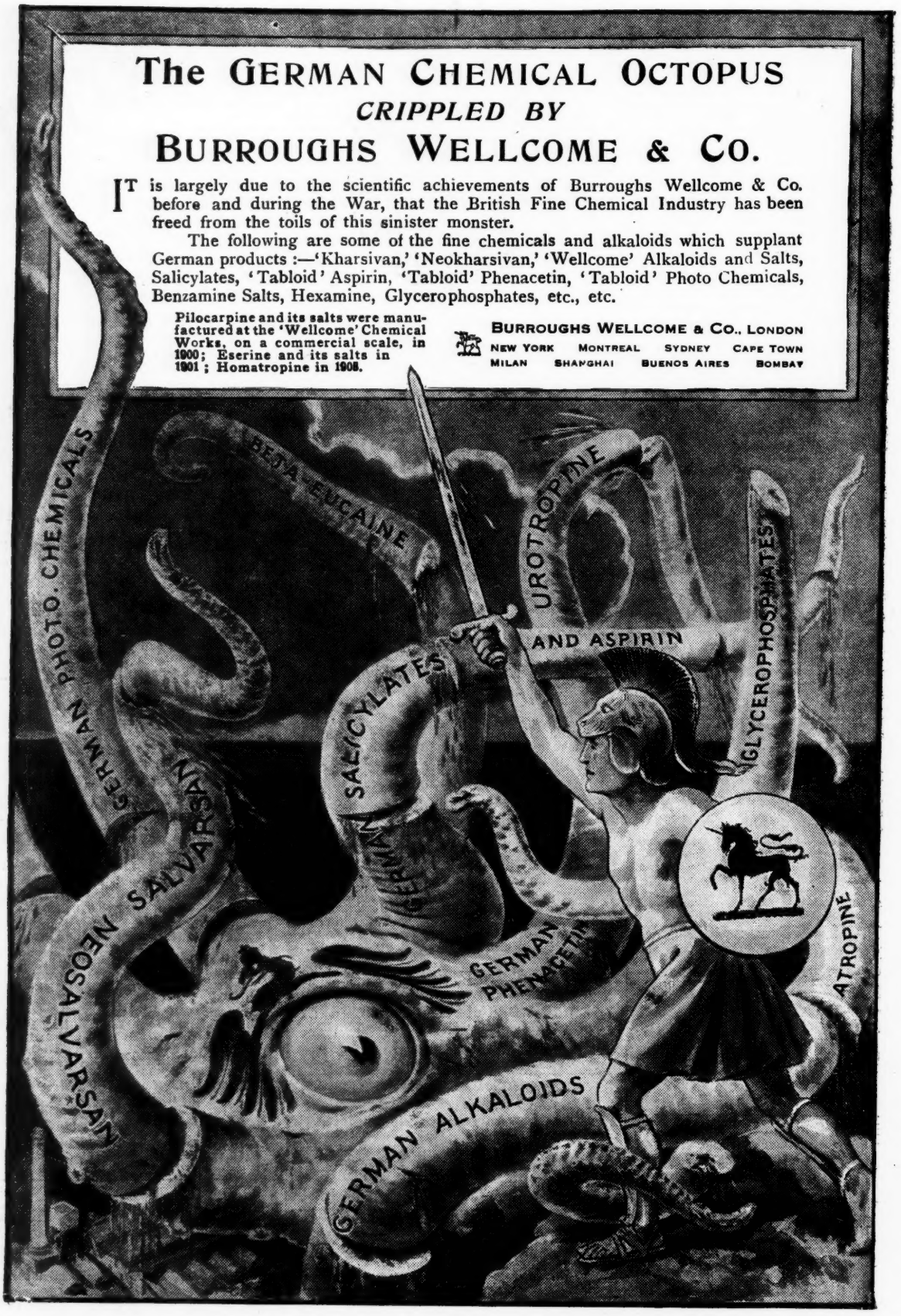

THE IMPERIAL COLLEGE OF SCIENCE, KENSINGTON:

ITS HISTORY, ORGANIZATION, AND ACHIEVEMENTS.

BY

SIR ALFRED KEOGH, G.C.B., M.D.,

RECTOR OF THE COLLEGE.

THE history of the development of the Imperial College of Science and Technology should prove interesting to the medical profession. The realization of the aims of the College in the region of pure and applied science is, despite difficulties, an example which gives encouragement to the belief that improvement in education and research in medical science and its applications is no mere dream.

THE HISTORY OF THE COLLEGE.

This is not by any means the first time that Kensington has done pioneer work in the cause of education and research. It should be a source of pride to us as members of our profession to reflect that the traditions and progressive tendencies which characterize the educational movements at Kensington were initiated by Huxley, and that the spirit which he infused still lives, though the objects differ. As it was from Kensington in the old days of the Science and Art Department that missionaries of education in the application of the physical and natural sciences went forth to the provinces to assist in the establishment of the technical schools, so to-day it is to Kensington we must refer the enlightened policy which, foreseeing the impending calamities which a neglect of science was likely to bring upon our industries, led to the foundation of this institution. For the need for the training of teachers had passed with the establishment, as a consequence of the Technical Education Acts, of numerous schools of science throughout the country, and the mission of the Royal College of Science had been fulfilled. The Royal School of Mines had shared in the consequent general lapse of the Kensington movement, though the establishment in the region, by the City and Guilds of London, of a College of Engineering kept alive the local tradition.

In the meantime alarm had spread amongst those to whom the importance of the recognition of education and research in relation to the development of science in the arts and industries was fully known. The rapid educational movements in Germany and America had led to a state of industrial efficiency which bade soon to place British industries in a position of inferiority, and indeed had in many instances already done so. Germany had devoted her greatest energies to the developments of technical education. She had, for example, utilized in her factories the chemical researches of the schools, and German factories continually demanded more knowledge and more scientific workers. It was the same in every branch of industrial work. Switzerland was early on the scene in a corresponding development, to which is due the great school at Zurich, set up for the purpose of developing higher education in applied science. In America these European models were generally followed and led to the establishment of the splendid schools and colleges for the study of science and technology which are characteristic of the United States. Everywhere, in fact, except in Great Britain and Ireland, the movement was in full swing, and it was little wonder that alarm at the consequences of indifference spread. Subsequent events have led to a general realization by the country of those things which were formerly familiar only to a few.

It is not possible within the limits allowed me to relate in detail the story of the movement which culminated in the conversion of the three Schools of Science at Kensington into a confederation of Colleges, the whole virtually a Science and Technical University, under the name of the Imperial College of Science and Technology. Suffice it to say that a mere recapitulation of the names of those who shared in the task of its formation would prove that the best brains of the country had been drawn upon to set forth not merely the need but the methods of accomplishing this most necessary task.

THE ORGANIZATION AND DEPARTMENTS OF THE COLLEGE.

It is rather to the results, which the medical profession who desire it will soon have an opportunity of seeing, during the Clinical and Scientific Meeting of the British Medical Association next April, which will be held in the College, that I prefer, in response to an invitation, to confine myself.

The seven buildings at South Kensington, five of them new, are engaged in giving the highest specialized instruction in various branches of science, especially in their applications to national needs, and are abundantly equipped to enable them to supply the most advanced education and to offer facilities for the highest researches in pure and applied science. To undertake so ambitious a task ample means in money were provided, and great increases in the staff and equipment were made to meet the necessities of so comprehensive a programme. The annual reports of the College are published, and, turning to the financial statements in them, we find that the gross value of the College is now £1,216,299, that increases to furniture, fittings, and scientific apparatus have cost £62,698, and that on additional new buildings the Governors have expended £279,240. The total income of the institution is over £90,000 a year. New chairs have been established and new departments set up. But these things, necessary as they may have been for the successful development of the institution and for the realization of the ideals of the Governing Body, are less attractive to the scientific worker than the quality of the staff. I will not recapitulate the departments, much less their subsections, but a glance at the calendar, which sets forth in great detail the scope of the work, shows us:

In the Royal College of Science, Professor Callendar, F.R.S., Director of the Department of Physics, assisted by Professor Fowler, F.R.S., Professor the Hon. R. J. Strutt, F.R.S., Professor Watson, F.R.S., and Assistant Professor S. W. J. Smith, F.R.S. Professor Baker, F.R.S., is in a corresponding position in the Department of Chemistry, with Professor Thorpe, F.R.S., as head of the Organic side, Professor Bone, F.R.S., head of the Department of Chemical Technology, and Professor Philip responsible for Physical Chemistry.

In the Royal School of Mines, Professors Frecheville and Carpenter, F.R.S., are the heads of the Mining and Metallurgy branches. Professor Watts, F.R.S., is responsible for the Geological Department and Oil Technology.

The Engineering College is controlled by Professor Dalby, F.R.S., Professor Mather, F.R.S., and Professor Dixon, respectively responsible for Mechanical, Electrical, and Civil Engineering.

The branch which deals with *Mathematics Pure and Applied*, is staffed by such Professors as A. R. Forsyth, F.R.S., and A. N. Whitehead, F.R.S.

The Biological Department, which must have a special interest for readers of the BRITISH MEDICAL JOURNAL, has as its head and director Professor Farmer, F.R.S., with Professor Blackman, F.R.S., responsible for Plant Physiology and Pathology (the late Professor Plimmer held the Chair of Comparative Pathology in this department), and Professor MacBride, F.R.S., for Zoology, the subdepartments of Cytology and Entomology coming under the control of Assistant Professor C. Dobell, F.R.S., and Professor H. Maxwell Lefroy respectively.

Students of these and other branches of science will recognize in these names leaders of scientific thought of whom any country might be proud, and it is not to be supposed that in the competition and rivalry of nations the part which it is now recognized science may play in the development of industries and in practical applications to the arts, the Imperial College is not destined for great achievements.

It must not, however, be assumed that whatever progress has been made by the College since its foundation it has nearly realized its ideals. To some extent the desire which has been evinced to stand aloof from educational politics in London has, by withdrawing it from public notice, also limited its development. On the other hand, its peculiar position in the educational world has procured for it support amongst those who know which it might otherwise have lacked. Even the Royal Commission of the University of London, bent on attaining the harmony and order in educational procedure which cannot be too highly praised, found it necessary, even at the sacrifice of

some symmetry, to realize the ideals of its founders, and only erred in evincing timidity in recognizing the need for an Imperial School of Science and research as distinct from a local institution. Something not dissimilar has previously occurred in Medicine.

VIRTUALLY A SCIENCE UNIVERSITY.

I have described this confederation of colleges as virtually a science and technical university, and the phrase may stand. It has been taken to assume the formation of a uni faculty university, and is regarded as at once a heresy and a paradox. It is neither. The proposal is for a three-faculty university—science, mining, and engineering. I am not myself wedded to the phrase, but if an imperial ideal has been the thought fundamental which has all through led to the establishment of the College, the dependence of such an imperial institution upon other universities for its academic distinctions is surely destructive of the imperial ideal. Nor is the idea distinctive of the Imperial College. It exists elsewhere in other branches of work, and may find realization later by the coalescence of similar movements into an Imperial University. However that may be, this trend of thought has definitely influenced the character of the teaching and the research at Kensington, as was intended, and it would be folly to depart from a policy so thoroughly considered, and upon which so much money and effort has been lavished.

The institution has been established for the vocational training of men intended for the professions of chemistry, the various branches of engineering, economic biology, etc., and this vocational training requires for its essential substructure a wide general scientific training of such a kind that the special courses in the special professions are all founded on common courses in science. The system of training is that still known as the Huxley system. The tutorial and laboratory method characterizes it at every part. The students in the departments of physics, chemistry, geology, etc. learn the use of instruments by handling them until technique and scientific method become part of their very being. Set lectures are reduced to a minimum. The student may be said to discover for himself under the inspiration of his tutors. The applications of science serve as the models to illustrate the principles. The ample equipment renders possible the adoption of a system which avoids dependence for its teaching on textbooks and demonstrations.

A LESSON AND A MODEL FOR MEDICINE.

In the daily round of my own duties as *servus professorum* it would be strange indeed if my thoughts did not frequently turn to my own profession and its splendid possibilities in the educational sphere, especially in London. It often strikes me that the parallel between medicine, chemistry, biology, mining, etc., is complete. The foundations are the same, and only the applications are different. At a particular period in his career at the Imperial College a student of any of the departments of knowledge could be diverted to medicine without delay or disadvantage, for, as I have said, the foundations are the same. The systems and methods of Kensington are applicable to medicine, and since they are costly they could only have been attained by combination of effort amongst the three constituent colleges.

Is there not in the history of the Kensington movements an example which may well be followed by the London medical schools? If the individuality of the separate schools here is retained while a combined effort for mutual assistance and support is sustained in the confederation of colleges, why should not the same system operate in medicine? It is true that combination of effort is difficult to secure in medicine, but, after all, in my experience, it is no less difficult in other professions. It must not be supposed that the path of the reformer at Kensington has been strewn with roses any more than it is anywhere else. All that can be said is that a sense of a common misfortune has proved stronger than vested interests. The tendency in medicine is centrifugal.

Combination, discipline, establishment of principles have carried Kensington as far as it has yet gone. Similar efforts in London medicine should lead to similar results, and one day perhaps we may see in London and elsewhere an Imperial School of Medicine, an Imperial School of Law, an Imperial School of Art, as we have to-day an Imperial School of Science and Technology. It may be the mission of the Universities Bureau to bring together the now scattered elements of such a confederation for the formation of a great Imperial University.

THE DEFENCE OF THE RESPIRATORY MEMBRANE AGAINST INFLUENZA, ETC.

BY

LEONARD HILL, M.B., F.R.S.,

DIRECTOR, DEPARTMENT OF APPLIED PHYSIOLOGY, MEDICAL RESEARCH COMMITTEE.

IN the account of a research on the action of ozone[1] carried out some years ago with M. Flack, after pointing out the poisonous action of too high concentrations on the lung, and the oedema and pneumonic condition produced thereby, and that very low concentrations could safely be used to add a quality to the air and take away offensive smell, we added the opinion "that ozone might possibly have some value in the treatment of disease of the respiratory tract if used in a concentration which produced a slight irritation and thus brought more blood and tissue lymph to the part.

Observations have demonstrated that the concentration which can safely be used in ventilation does not destroy bacteria in the air, and inhibits their growth on media slightly if at all. The respiratory membrane is much more easily attacked than the micro-organisms protected by their waxy or other resistant cuticle.

A poison gas like ozone, phosgene, or chlorine, when inhaled is concentrated by solution in the secretion covering the membrane, and the membrane defends itself by secreting fluid and so diluting and washing away the poison; hence the oedema of the lung, which increasing finally puts an end to the gaseous exchange and drowns the subject. The membrane responds in the same way to bacterial toxins.

How much a poison gas may have to be concentrated is shown by some experiments we carried out in 1915 on ciliated epithelium. While 1 in 100,000 of chlorine by volume is too irritating to breathe, it took over 1 in 40,000 by volume of chlorine to stop the movement of the cilia when chlorine water was added to the preparation.

In the case of smells, while it is true of certain substances that 1 in 100 million parts of air may be smelt, yet concentration of unknown extent must in this case also take place in the fluid bathing the olfactory sense organ. The act of sniffing, by directing the air on to one part of the membrane, must bring about this concentration.

In researches on the influence of atmospheric conditions on the nose[2] I have put forward the important influence which cool air—cool and therefore of low vapour tension—has on bringing more arterial blood to the respiratory membrane, and increasing evaporation from and therefore flow of tissue lymph through it. Warm moist atmospheres are against this natural washing and immunizing defence. In this, I claim, lies one explanation of the good effect of open air treatment, and the ill effect of crowded tenements. Exercise in the open air, by increasing the breathing perhaps five times, greatly increases the blood flow through and evaporation from the respiratory membrane, and in this lies one of the good effects of exercise. At Alpine health resorts the air is not only cool, but owing to its tenuity a greater volume must be breathed.

By some observations made in the recent spell of frosty weather, breathing first in and out of the nose, next in by the nose and out through the mouth, then in by the mouth and out through the nose, lastly in and out through the mouth, and taking the temperature with a thermo-junction inserted far back in the nose, I find the cooling, and therefore the evaporative, power of the air is by no means spent in the nose, but acts on the deeper parts and probably right down to the smaller tubes of the lungs. Especially is this the case when the breathing is made deep and the lungs fully expanded. A man may in an hour easily evaporate an ounce and a half of water from his membrane when taking exercise in cold weather.

There is another thing to consider, namely, the actual cooling of the membrane, which may check the growth of

sensitive pathogenic bacteria—for example, those of cerebro-spinal fever. Hence, again, the ill effects of crowded huts and tenements in spreading respiratory diseases. Mouth breathing, or a blocked airway on one side of the nose, keeps the nose (or one side of it) at a higher temperature, and makes it a better incubator for the growth of such bacteria, while it lessens blood flow through and evaporation from it.

There is some evidence (this is now being investigated) that workers in SO_2 factories are relatively free from colds, also those in commercial gasworks; chemical manufacturers, as a class, have a low phthisis mortality rate; the taking of ordinary snuff has been praised for keeping off influenza; nose-drill and the daily use of some mild antiseptic as a nasal wash, snuff, or spray are recommended for the same purpose; and recently evidence has come forth of considerable interest—namely, that the clerks in certain offices of the electric tube railways ventilated with ozone-air had 3 per cent. of absences in the late epidemic, while the clerks in the other offices, not so ventilated, had 10 per cent. All these agencies, just as the antiseptics used by surgeons in wounds, and Almroth Wright's salt treatment, have the effect of drawing out lymph, and so washing and cleansing the part. In the case of the respiratory membrane they take the place of the natural action of breathing the cool outside air. Probably tobacco-smoking in sedentary indoor workers brings about an increased outflow of lymph required by the membrane. The need for smoking is not felt when taking vigorous exercise in the open air. The smelling salts which used to be popular must play the same part.

To combat the influenza infection, then, I would urge the deep breathing of cool air, brought about by exercise, sleeping in open air, and as an adjunct any spray, gargle, or snuff which enhances the outflow of secretion from the respiratory membrane of the nose and throat.

The wearing of a mask by raising the temperature and humidity of the air breathed is against the natural defensive mechanism. People must eat and speak together, and will continue to kiss. The public may in time be taught to sneeze and cough into handkerchiefs or newspapers and not at large, and so lessen the dissemination of infected spray. Public conveyances, canteens, schools, cinemas, etc., require to be far more freely ventilated, but infection cannot be prevented by such means. The natural defence must be raised by the discipline of open-air exercise and by proper housing, and until this is brought about the public will continue to be scourged by diseases which kill, maim, and impoverish far more than the late war.

Experiments for Determining the Temperature of the Nose.

SUBJECT H.—Left side of nose largely blocked by deflected septum; right side of nose quite free. Temperature of air 1.5° C.

Temperature of left side of nose—	
Inspiring through nose, expiring through mouth ...	30.6° C.
" " mouth " " nose ...	32.3
Temperature of right side of nose—	
Inspiring through nose, expiring through nose ...	30.0° C.
" " nose " " mouth ...	28 0
" " mouth " " nose ...	33.3

Very cold early morning, just after bath and dressing. Temperature of air −5° C.

Temperature of right side of nose—	
Inspiring through nose, expiring through nose ...	21.4° C.
" " nose " " mouth ...	19.0
" " mouth " " mouth ...	27.1
" " mouth " " nose ...	27.1

After tobogganing:

Temperature of right side of nose—	
Inspiring through nose, expiring through nose* ...	28.5° C.
" " nose " " nose† ...	26.6
" " mouth " " nose ...	30.0
" " nose " " mouth† ...	24.3

* Quiet breathing. † Deep breathing.

Warm after two hours' walking:

Temperature of right side of nose—	
Inspiring through nose, expiring through nose ...	31.1° C.
" " nose " " mouth ...	31.1
" " mouth " " nose ...	33.3

SUBJECT H. A.—Observations taken in open air, after resting in warm room. Temperature of air −1.2° C.

Temperature of nose—	
Inspiring through nose, expiring through nose ...	33.8° C.
" " nose " " mouth ...	32.8
" " mouth " " mouth ...	34.4
" " mouth " " nose ...	34.4

After walking fast for forty-five minutes, but not heated by the exercise. Temperature of air −0.5° C.

Temperature of nose—	
Inspiring through nose, expiring through nose ...	29.6° C.
" " nose " " mouth ...	26.8
" " mouth " " mouth ...	32.8
" " mouth " " nose ...	34.1

The nose was warmer in the fourth observation than in the third because it had had more time to warm up after being cooled during the second observation.

The same subject, very warm after an hour's skating and rapidly walking back.

Temperature of nose—	
Inspiring through nose, expiring through nose ...	37.4° C.
" " nose " " mouth ...	37.4
" " mouth " " mouth ...	37.4
" " mouth " " nose ...	37.4

The membrane at the back of the nose in contact with the thermo-junction was sufficiently flushed with blood through hard exercise to keep the junction at blood heat whatever the manner of breathing was.

Estimation of the Water Evaporated, and Heat Lost from the Membrane, which Determine the Flow of Arterial Blood and Lymph through it.

Observations taken at open window. Fine, overcast, snow on the ground. Temperature outside window: Wet bulb, 1° C.; dry bulb, 1° C.

Temperature of nose—	
Inspiring through nose, expiring through nose ...	31.8° C.
" " nose " " mouth ...	29.8
" " mouth " " mouth ...	32.4
" " mouth " " nose ...	32.4

Volume of air expired in 10 minutes, collected by means of a mouthpiece, suitable valves, and a bag = 68 litres (pressure = 759.5; temperature = 279 abs.).

$\therefore$ Volume of air expired in 1 hour = 408 litres = $408 \times \frac{274}{279}$ = 401 at $p = 759.5$; $T = 274$ abs.

That is, volume of air inspired at 1° C. (274 abs.) = 401 litres; 401 litres saturated at 274 abs. contain 5.18×0.401 gram H_2O.

Now the 401 litres inspired at 274 abs. will at 304.8 abs. occupy a volume $401 \times \frac{304.8}{274} = 446$ litres, and will therefore contain 33.10×0.446 gram H_2O. (See tables of mass of water contained in saturated air at different temperatures.*)

$\therefore$ No. of grams H_2O evaporated per hour = $33.10 \times 0.446 - 5.18 \times 0.401 = 14.76 - 2.18 = 12.58$.

Exercise might raise this to 60 to 120 grams per hour.

Heat required to evaporate 12.58 grams = $12.58 \times 598 = 7523$ gram calories.

Now the heat required to raise a volume V of air in c.c. at temperature T and pressure p through t° C. is—

$$V \times \frac{273}{T} \times \frac{p}{760} \times C \times 0.622 \times S \times t.$$

Where C = density of dry air; S = sp. heat of air.

$\therefore$ Heat required to raise 401,000 c.c. at 274° abs. and 759.5 mm. pressure through $31.8 - 1 = 30.8$° C. is

$$401{,}000 \times \frac{273}{274} \times \frac{759.5}{760} \times 0.001293 \times 0.622 \times 0.242 \times 30.8$$
$$= 2393 \text{ gram calories.}$$

Total heat required to raise 401 litres of air saturated at 1° to 31.8° C. and saturate at that temperature is 2393 + 7523 = 9916 gram calories, or 10 kg. calories.

Exercise might raise this to 50 to 100 kg. calories per hour.

Observations taken sitting in a room, gas fire burning. Temperature of room: Wet bulb, 4.8°; dry bulb, 5.6°; dew-point, 3.7° C.

Temperature of nose—	
Inspiring through nose, expiring through nose ...	31.6° C.
" " nose " " mouth ...	30.6
" " mouth " " mouth ...	33.6
" " mouth " " nose ...	33.8

Volume of air expired in ten minutes = 61·5 litres; ($p = 759.5$; T. = 279 abs.).

$\therefore$ Volume inspired in one hour = 369 litres, against 401 litres for the open air.

A difference is clear, without carrying through the full calculation, between the frosty open air and this very cold room. It is very great between cold and warm humid air, and the sudden change from one to the other obviously strains the functions of the membrane. The body is protected by clothes—not so the respiratory membrane. Hence the need to stay in a *uniform* atmosphere when infected with a catarrh.

A further discussion of this subject, and of the influence of open air and exercise on metabolism—a subject of no less importance—will be given in a report on "The Science

* Mass of water vapour in grams per c. metre of saturated air: 32° F.. 5: 60° F.. 13: 100° F.. 45.

of Ventilation and Open-air Treatment," to be published by the Medical Research Committee, the first part of which is now in the press.

REFERENCES.
[1] *Proc. Roy. Soc.*, 1911. [2] *Lancet*, May 10th, 1913 (with Muecke); BRITISH MEDICAL JOURNAL, April 16th, 1916.

CAUSE, PREVENTION, AND TREATMENT OF INFLUENZA.*

By W. M. CROFTON, M.D.,

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DURING the first epidemic in Dublin last summer I isolated the *Bacillus influenzae* (Pfeiffer) without difficulty from the respiratory discharges of the first patients investigated. The culture medium I use as a routine is agar + 10 in reaction carefully made according to Eyre's directions and containing 1 c.cm. of fresh defibrinated unheated blood to each 10 c.cm. It will grow any aërobic pathogenic microbe with facility and profusion, not only the *B. influenzae*, but such difficult customers as *Micrococcus meningitidis*, *M. melitensis*, and even the gonococcus.

It appeared, therefore, very significant that in all my years of routine cultures of sputum I had not come across a microbe satisfying the cultural characteristics of the influenza microbe until the present epidemic.

There are several reasons why this bacillus has come under suspicion as the cause of the epidemic:

1. It has not been grown when present in the discharges.
2. It has often not been recognized when it has been grown.
3. Other microbes, ordinary catarrh-producing microbes, such as members of the pneumo-streptococcus group and *M. catarrhalis* group, always grow, and since none of them can conceivably be held to account for a pandemic, a filter passer is thought to be responsible.

1. Certain conditions are necessary for the cultivation of the influenza bacillus. It rapidly dies out if allowed to cool to room temperature. Therefore the discharges must be got to the laboratory in the shortest time and kept warm if possible. The medium must be suitable—such a one as I have described above, which for vaccine making purposes is far the most suitable owing to the hormonic influence of the fresh human blood on the bacillus. The commonly used blood smeared agar gives very poor results. Fildes, Baker, and Thompson,[1] when using this medium, failed to isolate the bacillus, but when they used a more suitable medium they succeeded constantly, and came to the conclusion that it was the cause. Others—for example, Macintosh—have isolated it in over 80 per cent. of cases. Has any one ever isolated this bacillus in such percentages from any series of cases of respiratory catarrh apart from an epidemic of influenza? On the blood smeared agar at the end of twenty-four to forty-eight hours the bacillus forms tiny dewdrop-like colonies which are very difficult to see. On my medium the colonies at the end of forty-eight hours may be several millimetres in diameter, are smooth, round, and have a ground-glass appearance.

2. At the end of twenty-four hours, when just isolated, the individual microbes are exceedingly small, and are often quite indistinguishable from cocci, especially if the magnification is not sufficiently high. Three times have I known the bacillus to be mistaken for cocci and the microbe said to belong to the *M. catarrhalis* group. Isolated from the cerebro-spinal fluid in a case of cerebro-spinal meningitis, I have known it to be mistaken at first for the meningococcus. In this respect the bacillus is not singular; for many years the bacillus of Mediterranean fever was thought to be a coccus, hence its name, *M. melitensis*; on suitable medium it invariably grows as a bacillus. So, too, young colonies of *B. coli* consist often of solely coccal forms, which become bacilli on further growth.

3. The microbes well known as catarrh-producing, such as members of the *M. catarrhalis* or the pneumo-streptococcus groups, can at once be dismissed as causes of the pandemic. None of them have ever been known to produce a pandemic. All of them are, of course, capable of producing epidemics and are responsible for the annual occurrences of pseudo-influenza. More recently certain very minute Gram-positive anaërobic microbes have been isolated in France in trench fever, polyneuritis, influenza, measles, rose measles, and two cases of typhus. They all appear to be similar and to have produced illness of very much the same type when injected into animals. They have also been isolated from the excreta of infected lice. I have no doubt such microbes do exist and do produce disease, but do they produce influenza? Quite similar microbes have been isolated from epidemic cerebro-spinal meningitis, from which the meningococcus can always be isolated. Does the filter passer produce this disease? If it does, we must stop using antiserum. It is important to remember that filter-passing Gram-positive cocci have before been isolated from cases of anterior poliomyelitis, and have been proved to be a phase in the life-history of streptococci and to have produced the disease in monkeys. Further, anaërobically and otherwise, streptococci can be grown so small that they pass through the Berkefeld and the coarser porcelain filters. I have made experiments with such a stolid microbe as the *Staphylococcus aureus*, and by varying the constitution of the medium have been able to make it vary in size from minute almost invisible dots to giant forms. It is well recognized that the tubercle bacillus can infect by such minute forms. Now streptococci of various sorts are constant inhabitants of the mouth and respiratory passages; they are always prepared to become pathogenic and complicate other infections. I suggest that in these cases these filter passers may be forms of streptococci or complicating infections *sui generis*.

The result of prophylactic inoculation with the antigen of the pure influenza bacillus adds great weight to the evidence for it as the cause. It is extremely easy to deceive oneself in this respect, because the incidence of the infection cannot absolutely be known. For instance, I know of one school of over 150 boys, all of whom got prophylactic injections, and none of them got the disease although it was raging in the vicinity. Dr. Parsons relates his experience of a school in which 30 per cent. of the boys got the disease. Half of the rest of the boys were then inoculated and half not. None of them, either inoculated or uninoculated, got the disease. Dr. Cremin, of Newcastle West, informs me that he inoculated 52 people in the midst of the epidemic, and only two mild cases occurred amongst them. On the other hand, much more significance is to be attached to the following results, because we have an indication of the extent of the infection. Dr. Keelan, of Mullingar, inoculated four members of the staff of forty-one of a racing establishment—all the uninoculated got the disease, not one of the inoculated. Among the students of University College, Dublin, of 182 uninoculated, 43.95 per cent. contracted the disease; of 113 inoculated, 21.2 per cent. contracted the disease, and of these all but 14.42 per cent. contracted it within twenty-four hours of inoculation; 14 per cent. as against 44 per cent. is a very remarkable contrast. If I had eliminated those who contracted it outside the three or four days' incubation limit the contrast would be still more remarkable. Among the attendants at Mullingar District Asylum only 4 per cent. of the inoculated developed the disease, over 50 per cent. of the uninoculated.

I think, then, it is certain that this pure influenza antigen had a marked prophylactic effect. The doses used were only 25 million in those who had colds and 50 million in those who felt normal. If I were doing it again I should not give more than 10 million to those who felt tired or had a slight headache, as they probably have the disease, and 25 million is too large a dose.

It is interesting to relate that several apparently quite normal persons have reacted to different doses and have had symptoms, lasting usually only an hour or two, exactly like those of influenza—namely, frontal and occipital headache, pains in the back and limbs, and severe malaise. I know of no other antigen which produces symptoms quite like these.

It is very important that the stock influenza vaccine should be potent. Making large quantities involves extensive subculturing. If the medium does not contain a substance—for example, fresh human blood—to induce the microbes to produce their specific toxins, they lose to a

* Read before the Medical Society, University College, Dublin.

large extent their antigenic efficiency. Further, there is no necessity to kill them by heat. They die rapidly when suspended in 0.5 per cent. phenol saline. The less heat used for killing antigens the better. Staphylococci require thirty minutes at 58° C. Streptococci, pneumococci, and *Micrococcus catarrhalis* require fifteen to twenty minutes at this temperature. My antigens are all counted on Thoma slides. I obtain the fresh human blood from the patients by running it through a suitable needle from a vein in the forearm into bottles containing broken glass; it is defibrinated by shaking.

Turning now to the treatment of uncomplicated influenza, two types are definable: (1) The patient is able to carry on his work, but feels abnormally tired and off his food, has slight headache behind his eyes and at the back of his head and some backache and soreness of the limbs, and (2) the patient suddenly collapses with a high temperature, pink conjunctivae, and all the usual symptoms.

If such cases are given at once 2½ million pure influenza vaccine, followed at a suitable interval by 5 million, the disease is very rapidly cut short, often in twenty-four hours. In other cases further doses (7½ and 10 million) may be necessary. Post-influenzal debility, which is so difficult to treat, will rapidly yield to a similar course of treatment. Quite recently I have had two very remarkable cases.

A boy of 18, whom I had cured of a post-pneumonic chronic infection of the lung, had a mysterious temperature of 99.6° to 101° for months. It had come on after a second dose (50 million) pure influenza antigen. I greatly feared it might be tuberculosis, but he failed to react to tuberculin (H.T.S.), and the catarrh vaccine previously used produced no result. Thinking it might be due to a chronic influenzal infection, I gave him 2½ million pure influenza vaccine; the temperature began to fall slowly during some days, but at the end of a week it began to rise again. I repeated the dose, when the temperature fell suddenly, and the patient is making a rapid recovery.

A medical student had a temperature for some days of 100° to 102° F. before taking to his bed. Then he began to see double. He became delirious and had hallucinations, but when talked to would rouse up and talk fairly sensibly. The conjunctivae were congested; he was badly constipated and wetted his bed; he had, in short, all the symptoms of encephalitis lethargica. On the chance that it might be influenzal I gave him 2½ million influenza vaccine; the improvement was immediate. I followed it by 5 and 7½ million, after which his mind was normal, but the temperature was still 99°. I then gave him 10 million, and all the old delirium returned, especially that night, although he had no further rise of temperature. He did not become mentally quite normal for two days. This reaction made it certain that the influenza bacillus or toxin was infecting his brain.

The blood of many cases who have suffered from influenza agglutinates the influenza bacillus sometimes in quite high dilution. The blood of one doctor who had had influenza some months before agglutinated the bacillus very strongly in a dilution of 1 to 160. As a rule, however, the agglutination is only given in much lower dilution.

The evidence, then, that the influenza bacillus is the cause of the disease is that—

1. The microbe appeared with the appearance of the epidemic.
2. It was isolated, when the conditions were suitable, from a large number of cases of the disease.
3. A pure influenza bacillus antigen produced a marked degree of prophylaxis even in the small doses used.
4. It rapidly cuts short the disease when the infection is uncomplicated; and cures the after-effects.
5. A pure influenza antigen can produce all the symptoms of the disease.
6. The serum of influenza patients agglutinates the influenza bacillus.

Complicating Infections.

I think in the recent epidemic there were two methods of infection with the complicating catarrh microbes. Either they accompanied the influenza microbe when it was passed on from one person to the other or the patient's own microbes flared up when his resistance was lowered by the influenza bacillus. There was no uniformity in the complicating microbe flora. Nearly all the worst cases of septic pneumonia had the *Staphylococcus aureus*, as well as streptococci, pneumococci, or *Micrococcus flavus*, or other Gram-negative cocci. The staphylococci are much the most to be dreaded.

The incubation period of these microbes is longer than that of the influenza bacillus, and the human organism can often overcome them if the help of the influenza bacillus can be done away with in time; therefore, if the patient is given a 2½ million dose of influenza vaccine at once, complications are prevented. If there are marked signs of catarrh—indeed, if there is sputum at all—it is highly desirable to give a mixed vaccine containing *Staphylococcus aureus*, streptococci, pneumococci, and *M. flavus*, as well as the influenza vaccine. The initial dose should be:

Staphylococcus	5 million
Strepto-pneumococcus	1¼ „
M. catarrhalis	1¼ „
B. influenzae...	2½ „

I always plate out the sputum or swab from the throat and get an autogenous mixed antigen as soon as possible. I also give the patient daily intravenous injections of diosal (1 per cent. sodium salt of di-iodosalicylic acid), beginning with 3 c.cm. in an average case. This substance is a very powerful intravital germicide for such microbes. The result of the combined method of treatment is often very remarkable and rapid.

Delayed resolution after the pneumonia is frequent. This can, as a rule, be rapidly cleared up with thiosinamine sodium salicylate (fibrolysin) or thiosinamine ethyl iodide (tiodine).

At the first sign of bronchial congestion, with cyanosis and dilatation of the right side of the heart, the patient must be given ½ to 1 c.cm. doses of pituitrin as often as is necessary. This tones up the heart and bronchial muscles, or relaxes the latter if there is spasm. There is no other substance that gives this remarkable combined effect.

REFERENCE.
[1] *Lancet*, November 23rd, 1918.

THE TREATMENT OF INFLUENZA.

BY
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AND
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DURING the second phase of the epidemic—in the two months from October 10th to December 9th, 1918—there were admitted to a general hospital, B.E.F., France, 937 cases of influenza. The mortality was 26 (2.77 per cent.). We have reason to believe that this figure compares very favourably with that obtained in other places, and it may therefore be of interest to outline the treatment employed.

The first wave of the influenza epidemic terminated in the area towards the later part of the month of June. During July, August, and September only a few sporadic cases were seen. Early in October, however, the disease reappeared in a more virulent form, and in certain districts the mortality from it was very high. Nearly every case presented pulmonary symptoms in some degree, and at the commencement of the wave were serious in about one out of every four. In many there was a profound degree of toxaemia and a tendency to cardiac failure. The pulmonary complications included bronchitis, pleurisy, bronchopneumonia, and lobar pneumonia, and oedema of the lungs. Other complications were rare, but there were a few instances of nephritis, and one of purulent meningitis. Delirium, unconsciousness, and extreme tremor were frequently present in the severer types. It will therefore be apparent that the series of cases with which we are dealing included a large proportion of the most virulent infections. As practically all were admitted locally, they were admitted early—a great advantage, as each patient travels very badly.

The treatment in the acute stage may be related under six headings:

1. *The general management* was that of a fever. As far as possible, patients should be treated in the fresh air. In this hospital they were placed in large Adrian huts, the doors and windows of which were always kept widely open. A sufficiency of blankets and hot bottles were provided to ensure warmth, but overheating (which produces restlessness) must be avoided. The diet should consist mainly of fluids, milk, beef-tea, clear soups, egg-flips, jellies and custards. Beef-tea is especially valuable

because of its stimulant properties. The drinking of large quantities of water, barley water, or lemon water, should be encouraged, as elimination is thereby promoted and the degree of toxaemia reduced.

2. *Absolute rest* during the acute stage is of paramount importance. In the severer cases collapse, shown by laboured breathing, cyanosis, exhaustion, sweating, and rapid acceleration of the pulse, is produced by any degree of movement. The patient should be disturbed as little as possible by examination, which should always be as brief as is consistent with efficiency; however desirable it may be from an academic point of view to determine the precise nature and extent of the pulmonary complications, their exact diagnosis matters little so far as treatment is concerned, for this is indicated by the general condition of the patient, rather than by the pathological lesion present.

3. *Sleep must be ensured.* The result of a sleepless night at once shows itself by a falling off in the patient's general condition, and two or three such nights may make all the difference between recovery and death. Especially is sleep necessary in patients showing pronounced tremor; when this symptom is present the physician's first endeavour must be the production of sleep. He should regard tremor as an indication of exhaustion and a danger signal which he must not disregard. It has been our custom never to allow a sleepless night. Tepid sponging may first be tried, but, if insufficient, the patient should be given heroin gr. $\frac{1}{12}$ hypodermically, repeated once or twice, if necessary, at intervals of an hour and a half, until sleep is obtained. A satisfactory night's rest is almost always followed by considerable improvement in the general condition.

4. *Medicinal Treatment.*—We had had ample opportunity in the first stage of the influenza epidemic of testing the action of various medicinal agents, and were not satisfied that any of them exercised much influence on the course of the disease. At the commencement of the second wave we determined to test systematically certain likely remedies with the view of determining, if possible, their relative value, and of enabling us to adopt as routine treatment that which appeared to give the best results. Accordingly, groups of patients—fifteen in each—were put upon different drugs, and the progress of the various groups noted and compared. Aconite, aspirin, sodium salicylate, belladonna, arsenic, quinine, Dover's powder, and gelsemium were tested in this way. The results were most striking. The patients treated by gelsemium improved in a manner far exceeding those given any other treatment. They stated that after a few doses their headache and backache had been much relieved, and that they felt greatly better in every way. In most the temperature speedily commenced to fall, and the improvement in the general condition was obvious. So great was the contrast that it is no exaggeration to say that it was usually possible, without previous knowledge, to pick out the cases treated with this remedy. Of the other drugs tested, belladonna showed evidence of beneficial action in a number of cases, but none of the other drugs appeared to have the slightest influence. The patients were not selected in any way, but were taken consecutively as they were admitted; moreover, we were working separately at the time, and came to the same conclusions independently. The same observation was also made by the sisters in charge of the wards, who enthusiastically supported gelsemium against the other remedies.

We are well aware of the fallacies attending judgement of the action of remedies, and have therefore endeavoured to examine very critically our original observation. For this reason we have delayed drawing attention to the beneficial action which we believe gelsemium to exert. The test was repeated with the same result—again so striking that thereafter we did not feel justified in using any other remedy. Seeing, however, that belladonna appeared also to be of value, we considered it advisable to use it in combination. All our recent cases, therefore, have been treated with the following:

℞	Tr. gelsemii	♏xij
	Tr. belladon.	♏v
	Potas. cit.	gr. x
	Syr. aurantii	℥j
	Aq. chloroformi... ... ... ad	℥j

Sig. One ounce four hourly for the first 24 hours; thereafter ½ oz. every four hours until temperature is normal

Potassium citrate was added as a mild diuretic. When the temperature reaches the normal the remedy should be stopped.

Gelsemium has previously been recommended as a remedy for influenza.[1] Our observations lead us to believe that it exerts a marked beneficial action on the course of the disease, that it tends to shorten the illness, and it undoubtedly relieves—and rapidly—the discomfort of the patient. Beyond slight ocular disturbances in a very small number of cases, we have not seen any disadvantages in its use.

5. *Stimulants* are indicated in the severe toxic cases; where the pulmonary symptoms are severe; where tremor is marked; where the pulse is unstable; and when the patient is obviously collapsed. Alcohol in the form of brandy, whisky, or champagne gives the best results, and the large quantities that can be consumed without producing any signs of inebriation is very remarkable. The usual dose required is half an ounce every four hours, or more often if the case be urgent. Should there be any suggestion of overdosage, aromatic spirits of ammonium (½ to 1 drachm) may be substituted. Tincture of digitalis (♏ v every four hours) seemed to be useful when there were any signs of cardiac failure. Caffeine, strychnine, adrenalin, and pituitrin produce no beneficial action of any kind.

6. *The treatment of pulmonary complications* calls for no special discussion, as it is carried out on the usual lines. It may be mentioned, however, that the compound tincture of chloroform and morphine (♏ x every four hours) is particularly efficient in soothing the often troublesome cough, and that inhalations of menthol and benzoin greatly relieve the tightness in the chest so frequently present.

Treatment during Convalescence.—The degree of debility produced by influenza of the recent type is often extreme, and is particularly associated with circulatory symptoms—palpitation, coldness, and blueness of the extremities, and a tendency to syncope—as well as marked general weakness. During convalescence a period of comparative rest is indicated, and a nourishing diet with extras—milk, eggs, port wine, and stout or porter. Iron and arsenic, cod-liver oil, or some bitter tonic should be prescribed according to the requirements of each individual case.

REFERENCE.

[1] Ellingwood, *Prescriber*, 1913, p. 275.

A NOTE ON THE EPIDEMIOLOGY OF INFLUENZA AMONG WORKERS

IN GAS WORKS, IN A CORDITE FACTORY, AND IN A TIN MINE.

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[THE following interim report to the Medical Research Committee is published now in the hope that observations of a similar kind may be collected elsewhere. Bacteriological and chemical analyses of the events here recorded are now in progress, with a view to finding how far the observed facts may be related to the action of some inhaled substance, either upon infective agents or upon the protective mechanisms of the respiratory tract as such.]

For many years it has been an accepted fact among men working in gaseous fumes that they are practically immune from nasal catarrh and respiratory diseases in general. Further, in some parts of the country it is the custom to take children suffering from whooping-cough to the nearest gasworks and expose them to the fumes emanating from the oxide of iron purifiers during the process of cleansing, and the parents of these children firmly believe that by doing so the attack is much mitigated.

With this widespread belief in mind, investigation has been made during the influenza epidemic among various classes of the population, to see if there were any substantial grounds for this popular belief, and the case incidence has been ascertained among the classes of persons shown in the tables.

Table showing Incidence of Influenza among (a) Navy (a Patrol Base of average strength of 1,350); (b) Army (a Battalion of average strength of 1,050); (c) Gas Workers (Nine Gasworks, employing 148 men).

Epidemic.	(a) Navy.	(b) Army.	(c) Gas Workers.
July	321 = 23 %	100 = 9.5 %	5 = 3.3 %
Autumn... ...	125 = 9.2 %	110 = 10.4 %	5 = 3.3 %
Total ...	446 = 40 %	210 = 20 %	10 = 6.7 %

(d) At a National Cordite Factory.

The total number of employees, men and women, may be divided into the following classes:

Class A. Not working in fumes	732
Class B. Working in HNO_3 fumes, full time ...	70
Class C. Working in HNO_3 fumes, part time ...	230
Classes B and C	300
Class D. Working in acetone recovery stoves	18
Classes B, C, and D	318

Number of Cases according to Class and the Percentage.

Epidemic.	Class A.	Class B.	Class C.	Classes B and C.	Class D.	Classes B, C, and D.
July ...	121=16.5%	7= 4.9%	2=0.86%	9= 3%	0	9=2.7%
Oct. 16-29 .	100=13.6%	4= 2.8%	2=0.86%	6=2%	0	6=1.8%
Total ...	221=30.1%	11=15.7%	4=1.7%	15=5%		15=4.7%

(e) Tin Workers.

The total number employed in the mine was 50. This number may be divided into Class A, workers underground, numbering 23, and Class B, workers in dressing plant who are working more or less in fumes of SO_2, numbering 27.

The ore is crushed in the stamps and passed over the water concentrators. The concentrate is roasted in ovens to get rid of the sulphur, and thus a large amount of SO_2 fumes is discharged into the building.

Number of Cases in the Autumn Epidemic according to Class, and the Percentage.

Class A	14 = 60.8 per cent.
Class B	3 = 11.1 ,,

The burning-house of this mine lies in a valley, and there are seven cottages, all situated within two hundred yards of the stack from which the SO_2 fumes are discharged. Under certain atmospheric conditions the fumes lie heavily on these houses. They have twenty-seven inhabitants, and only one case of "influenza" occurred among them, and he was one of the underground workers in the mine. A small village lies about a quarter of a mile distant, and quite outside the radius of the fumes. Here the cases were numerous.

(f) Other Classes of the Civil Population.

As influenza is not a notifiable disease it is impossible to get exact statistics of the number of victims. But taking into account the evidence we have, such as the death-rate, the number laid aside from work in the public civil services, the largely diminished attendances at the schools throughout the country, resulting in many places in closure, we are justified in saying that the case incidence must have been high. Then again, though the figures are much too small to warrant any definite conclusion, the numbers affected among the non-fume workers in the cordite factory may be taken as some indication of what happened among the general community. On the other hand, apart from the smallness of the numbers, it would be manifestly unfair to draw any conclusions from the cases occurring among the underground tin workers, as the conditions under which they labour lead to the easy diffusion of any infection. The conditions under which the men of a naval patrol base live are such as tend to the spread of infection also, and this accounts for the high incidence rate among them.

Percentage Summary of Case Incidence.

Navy...	40.0
Army	20.0
Cordite workers not in fumes	30.1
Cordite workers in fumes	4.7
Gas workers	6.7
Tin mine workers not in fumes (one epidemic)	60.8
Tin mine workers in fumes (one epidemic) ...	11.1

Notwithstanding the diversity of occupation, a comparative study of the above figures gives a remarkable picture of the immunity of workers in certain chemical fumes to a certain disease. This is clearly brought out when the figures for the cordite factory are studied. Here a certain number of men and women not only work but also live in their own homes under exactly similar conditions in every respect, except for the one fact that some are more or less exposed to fumes during their working hours, others are not. In one gasworks which came under review there were twenty-five employees, twenty-four of whom worked more or less in fumes. There was only one case, and he never worked in fumes. He was a cinema hall attendant in the evening.

Therefore, from the epidemiological evidence, though it does not cover a large number of people, it would seem that the popular belief in the cure of "colds in the head" by fumes has some foundation of truth.

TREATMENT OF WOUNDS BY PARAFFIN.

BY

CAPTAIN E. F. PRATT, R.A.M.C.(V.).

THE question of the treatment of wounds has been one of absorbing interest ever since Lister revolutionized surgery. One by one various treatments have held sway, and hosts of antiseptics have been acclaimed by their various supporters in turn as the most rational and effective agent to use as a dressing.

In the BRITISH MEDICAL JOURNAL for January 13th, 1917, was an interesting article by Lieut.-Colonel A. T. Hull on the treatment of burns by paraffin, and again in the issue of August 24th, 1918, there was another interesting article by Major William Haig on the treatment of wounds by soft paraffin. The latter points out the value of ordinary soft paraffin in the treatment of lacerated wounds.

The cases I mention in this short paper are especially interesting, inasmuch as not only is the effect of the first dressing shown, but I have been able to give the history of the majority of the cases from start to finish.

As certifying factory surgeon for East Newcastle-on-Tyne, and as surgeon to Newcastle Corporation Tramways, and more particularly as medical referee under the Workmen's Compensation Act to Messrs. Hawthorn, Leslie, and Co., St. Peter's Works, it is my fortune to come into contact with great numbers of burns and accidents every year.

Only the minor accidents come under my notice, as the major ones are taken straight from the works to the infirmary to be there treated. I have been struck over and over again by the long-drawn-out process of healing of burns and lacerated wounds when subjected to the hitherto orthodox treatment, and when I read of the excellent results obtained by the treatment of burns by soft paraffin (or ambrine) I could not help thinking that it would be worth while to try the experiment of treating wounds in a similar way.

During the early summer of last year I treated several cases of lacerated wounds, and was so struck by the results that I asked for and was readily given permission to treat systematically lacerated wounds and burns occurring at the works of Messrs. Hawthorn, Leslie, and Co.

The results, to my mind, are convincing, and I know of no other treatment in which the constitutional symptoms so quickly disappear, in which the pain so rapidly subsides, and in which healing is so uninterrupted as in wounds and burns treated by soft paraffin. In some cases I used ambrine and in others No. 7 paraffin, and I cannot say that I have any preference for one medium over the other, as in both the results could not have been more gratifying.

Method of Procedure.

The wound or burn is first thoroughly cleansed with sterilized water; the paraffin is then melted and either sprayed by a special spray or painted by a sterilized brush over the affected area. One layer of gauze is then placed over the injured part, and then another layer of melted paraffin is either sprayed or painted over the gauze. On the top of this a cotton-wool pad is placed, and then

the part is bandaged. The dressing is left undisturbed for twenty-four hours, when it is removed and a fresh application made. A third dressing is applied in ordinary cases the next day, and, when necessary, a fourth dressing two days after that.

I have used this method of treatment in more than thirty cases, and in no instance has there been failure to relieve pain immediately, to prevent or remove sepsis, nor failure to produce healing in a few dressings, five being the greatest number in any one case, and that in only two instances.

I am correct in saying therefore that every burn and every wound treated by me, by paraffin, healed up in a week, and the injured persons were able to return to their work—a very important consideration both from the point of view of the injured one and also from that of the employer.

I append here summaries of some of the cases in question.

1. Boy. Burn on wrist and skin broken. Healed in three dressings.
2. Boy. Burn on fingers, skin unbroken. No blisters formed; healed in two dressings.
3. Boy. Burnt hand. Pain disappeared immediately on application of dressing; no blister present on following day when a second dressing was put on as a safeguard.
4. Youth and man. Both burned on face and arm by a hot chemical liquid,* blisters forming when cases first seen. All pain disappeared immediately on application of dressing. When dressing was removed next day there was no blister, but only dry dead skin which peeled off three days later, leaving a perfectly healed surface.
5. Two boys. Burn in palm of hand with small blister. Pain relieved immediately by dressing; blister was same size next day and was then cut and dried with sterilized wool. Paraffin reapplied, and again on the two following days. On removing dressing two days afterwards healing was complete.
6. Four boys. Burns. No pain after dressing; no blisters formed; healing after the second dressing.
7. Boy. Burn on leg, skin unbroken. Pain relieved immediately; no blister formed.
8. Woman. Lacerated fingers. Completely healed after four dressings.
9. Boy. Blow from hammer on end of finger, laceration near the root of the nail. Pain disappeared on application of dressing. On redressing next day the boy reported that he had had no trouble with the finger, and he did not return for any further dressing, but went back to work.
10. Boy. Skin scraped off leg. Pain relieved immediately; next day the wound was dry, clean, and healed.
11. Boy. Incised wound of finger. Healed after three dressings.
12. Boy. Came to ambulance room with an old wound on finger-joint which kept reopening. Completely healed after two dressings.
13. Boy. Lacerated thumb. Healed after three dressings.
14. Boy. Lacerated wound of fingers. Healed with three dressings.
15. Boy. Lacerated wound of fingers. Healed with two dressings.
16. Boy. Septic wound of finger. Wound was washed and dressed; pain disappeared immediately and the wound was clean next day. Completely healed after two more dressings.

In face of such results I need no apology for urging the claim of soft paraffin as a dressing, and I feel sure that what has been found to be so good in minor injuries has every chance of being equally good in major cases.

It seems to me that this is an appropriate place to refer to the now famous bipp treatment of wounds. I have read the fascinating little book by Professor Rutherford Morison, and I am not ashamed to confess that I could not put the book down until I had finished it. After reading it, I asked myself a question which I often asked in the old days of lengthy prescriptions—namely, which ingredient is it that is effective? In the case of bipp, is it the bismuth, the iodoform, or the paraffin, or is it all three combined?

With some hesitation, as I am not in a position to speak so positively as an operating surgeon could, I throw out the suggestion that the paraffin is the most important of the three ingredients. Iodoform alone has been used for many years, and almost discarded partly because of its smell, partly because cases of poisoning have occurred, and partly because results were not universally successful. Of bismuth alone I have had no experience, but paraffin alone I have tried and with the remarkable results already given in this paper.

* I have been unable to ascertain the exact nature of this substance, but it appears to be a mixture with a melting point of 213° C. At the time of the accident it would be about 250° C. (482° F.).

I take it that the three objections to bipp are, first, expense; secondly, the risk of toxic symptoms; and thirdly, the possibility of some interference with *x*-ray examinations. Where the result means the saving of a limb or of life, or merely the shortening of the healing process, expense cannot be considered. In the case of paraffin, however, the expense is reduced to a minimum, there is no risk of any toxic symptom, nor is there any interference with *x*-ray examination.

A suggestion that antiseptic paraffin retards the process of healing by destroying the saprophytic action of bacteria is, in my opinion, unsound, and without foundation in experience.

My thanks are due to Lieutenant H. S. Crace for his very great help in the conduct of the experiment, and to Mr. Renwick, the ambulance room attendant at St. Peter's Works, for the very careful way in which he has carried out the treatment, and for his kindness in compiling a record of the cases.

ACRIFLAVINE EMULSION AS A WOUND DRESSING.

By THOMAS E. A. STOWELL, F.R.C.S.,

HONORARY SURGEON TO THE VICTORIA INFIRMARY, NORTHWICH, AND SURGEON TO THE LEY AND NUNSMERE AUXILIARY RED CROSS HOSPITALS.

HAVING used flavine from the time when supplies first became available—formerly in military hospitals in France and latterly in both civil and military hospitals in this country—I have shared the disappointment which many surgeons have experienced in the results gained from using a 1 in 1,000 solution in normal saline. I believe that on this account many surgeons have ceased using flavine. By publishing the formula of an emulsified preparation of the dye, together with a few specimen cases showing its effect, I venture to hope that I may do something to restore confidence in what I believe to be our most powerful weapon against wound infection.

The value of purified paraffin as a wound dressing is well recognized, and I sought a combination of paraffin and flavine which would combine the known advantages of the former with those claimed for the latter, and I am much indebted to Mr. Griffiths Humphreys, M.P.S., of High Street, Northwich, for the patience and skill with which he has worked out a stable emulsion the droplets of which, when examined microscopically, are seen to be similar in size to those in a good emulsion of cod-liver oil, and which has given clinical results that I had not dared to hope for.

Mr. Humphreys's Formula.

Acriflavine	0.1
Thymol	0.005
White wax	4.0
Liquid paraffin	76.0
Distilled water	20.0

A good deal of skill and care is necessary in the dispensing of this emulsion in a sterile condition. It is put up in small sterile bottles, stoppered and sealed. The addition of the thymol has given better results in cases of mixed infection, and its presence has not prejudiced the results in the simpler cases.

In dealing with broken down tuberculous glands, after scraping, I have followed the practice of introducing a small quantity of the emulsion before closing the wound. The following case is, I think, a fairly severe test.

CASE I.

A. M., female, aged 18. Broken down tuberculous glands in the anterior triangle of the neck along the upper half of the sterno-mastoid muscle. Mixed infection, and a three weeks' old sinus. The tissues involved in the inflammatory process (which included the internal jugular vein) were removed piecemeal, and soiling of the newly cut tissues was inevitable. There was considerable oozing, which I was unable to control otherwise than by packing with gauze, after introducing a small quantity of the emulsion into the wound. Stitches were then inserted, but not tied. In twenty-four hours I removed the packing, and filled the cavity (about the size of a pigeon's egg) with the emulsion. Primary union ensued in seven days with a small linear scar.

It has been my custom for some years, when operating for acute infective abdominal conditions, whenever possible completely to close the peritoneum and trust to the visceral

layer of that membrane to deal with what infection remained after removal of the primary focus. I had always found it necessary, however, to drain the abdominal wall when there had been soiling of the wound edges. By filling the wound with the emulsion after closing the peritoneum, I have found it safe completely to close the wound, and thus avoid the potential incisional hernia which a drainage tube leaves. The following two cases furnish fairly severe tests of the efficacy of the emulsion in recent wounds.

CASE II.

T. L., a farmer, aged 38, with gunshot wound of elbow. The lower third of the humerus, the upper end of the radius, and the surrounding soft tissues were destroyed. The lower end of the remaining fragment of the humerus, the upper end of the lower fragment of the radius, and the upper extremity of the ulna were exposed in a wound extending from four and a half inches above the elbow to three inches below the joint, and the floor of the wound was formed by the brachial artery. There was no destruction of nerve trunks. The comminuted bone, and as much as possible of the damaged muscle, was removed. Owing to extensive destruction of skin it was impossible to close the wound, but the edges were drawn together at the upper end of the wound as far as possible without tension, and the cavity was lightly packed with gauze wrung out of flavine. The wound was dressed every three days. Owing to its size the wound has been somewhat slow in healing, and now at the end of nine weeks there remains a superficial ulcer about the size of a florin, and at no time during the period of healing has there been any evidence of infection—and this in spite of the fact that the wound was badly contaminated with manured soil, clothing, and the wad of the cartridge. The scar tissue is small in amount, and is soft and elastic. The limb is flail. After improving the nutrition of the limb by massage and electrical treatment, I intend to ankylose the elbow by means of a bone graft, and I have little doubt that a limb which at first looked fit only for amputation will be converted into a strong and very useful one.

CASE III.

O. J., a woman aged 22, had a compound comminuted fracture of the fibula due to direct violence. There was much bruising and laceration of surrounding tissues, and the anterior tibial nerve was divided just above the annular ligament. The patient was in a filthy condition, and dirty clothing was embedded in the wound. The patient's skin was cleaned with petrol, and sterilized with iodine. As much as possible of the soiled and damaged tissues was excised; the damaged nerve was sutured with fine catgut. After all bleeding had been controlled, the emulsion was applied to the surface, and the wound was closed with salmon gut. In seven days the six-inch wound was healed except for half an inch at its upper end. There was no evidence of infection in this half-inch, which had healed by the twelfth day.

The fracture of the fibula followed a normal course. In three months protopathic (but not epicritic) sensation has returned in the area of distribution of the anterior tibial nerve.

The only disadvantage that this emulsion has is its price, which works out at about five shillings for eighteen ounces. Having in mind the way in which it expedites the patient's recovery, and limits the disability resulting from his injury or disease, the saving of man power, particularly in industrial accidents, is such that the relative cost of the preparation is negligible.

TREATMENT OF ACUTE GONORRHOEA: MASSAGE-PACK METHOD.

BY J. P. FOGARTY, M.C., MAJOR A.A.M.C.,
S.M.O. OVERSEAS TRAINING BRIGADE, A.I.F.

IT is now an Australian A.M.C. order that the massage-pack method of early treatment of gonorrhoea shall be used to the exclusion of all others.

As the originator of this method, and the first to point out to the A.D.M.S., A.I.F. dépôts in the United Kingdom its superiority over irrigation and sealing up processes, I wish to submit the following detailed account of my efforts and the results obtained.

My original object in devising the method was to put into practice a theory that the speediest and the best curative results would be obtained by dressing and draining the infected portion of the urethra, by the application of an antigonococcal chemical to the infected surface, and by preventing the spread of the mischief.

To attain these objects the basis of the treatment consists in packing the anterior portion of the urethra with a material soaked in silver solution. The pack not only absorbs the discharge and drains the infected part, but, by mechanically dilating the urethra, it enhances the prospects of the chemical reaching the site of infection, and prevents apposition between infected and non-infected surfaces.

For packing I have found soft gauze far superior to cotton-wool. It is more absorbent, less irritating, and more easily passed into and withdrawn from the urethra; it has no tendency to break, and shreds are not detached from it.

In the large majority of my cases argyrol has been used for preference, but during periods of shortage silver vitelline has been tried with equally successful if not quite as speedy results.

From a curative point of view an argyrol solution stronger than 5 per cent. is not necessary, and 7 per cent. and 10 per cent. show a tendency to cause soreness, necessitating less frequent packing, thus depriving the case of the benefit of the mechanical advantages of the pack. I have found haemorrhage even with 10 per cent. a rare occurrence, and not in one single instance with 5 per cent.

Method.

The patient having passed water, and the glans penis and prepuce having been well washed with 1 in 8,000 solution of potassium permanganate, a probe is introduced into the urethra to determine its general direction and whether there is any narrowing or other obstruction.

A strip of soft open woven gauze is cut half to three-quarters of an inch in width and about seven inches in length. The width of the strip should vary with the size of the meatus, and with experience and practice can be estimated accurately. Having rolled the strip into a cylinder and well soaked it in 5 per cent. argyrol, one end is folded over the extremity of a probe and passed up the urethra until resisted at the bend. Thus the whole anterior urethra will be packed. The excess of the pack may be cut off at the meatus.

The procedure is facilitated by opening the meatus with the tips of the thumb and index finger of the hand holding the penis, and by balancing the free end of the strip on the little finger of the hand holding the probe. If the penis be slightly tilted upwards and the strip well balanced the loss of argyrol by dripping will be obviated. There is no danger of injury to the urethra if a moderately large probe with a good bulbous extremity be used.

Having packed the anterior portion of the urethra, the penis is then gently massaged for five minutes, all the movements being made towards the root of the penis.

The pack is then withdrawn, the meatus, in so doing, being gently compressed between the finger and thumb in order to leave behind in the urethra as much argyrol as possible.

A second pack is then introduced in the same manner as the first and retained for four hours, or, if the patient does not require to pass water, even longer. Whilst the pack is being retained for four or more hours there is no tendency for the discharge to trickle outwards along its side, and on withdrawal there is no evidence, such as a flow of pus, to suggest an accumulation of discharge behind the pack. On the other hand, on withdrawal, the pack will have lost most of its argyrol colour, and pus, especially in cases with copious discharge, may be easily squeezed from it.

The number of packs given in the day's treatment will be guided by the condition of the case, but as a general rule the pack is indicated with a purulent discharge or with acute subjective symptoms, such as scalding, even before the purulent stage is reached. The majority of my cases have responded to two packs a day (morning and evening), but when necessary, as in a number of cases, I have found three packs in one day easily tolerable.

The pack is rarely necessary after the fourth morning of treatment. As soon as the discharge, observed before passing water in the morning, ceases or becomes non-purulent (clear watery) the pack should be discontinued and treatment confined to gentle irrigation with 1 in 5,000 potassium permanganate three times a day.

Results.

Between the dates March 1st and December 31st, 1918, I have applied the treatment to 742 cases of acute gonorrhoea. Of these the number "*not* cured" and evacuated to a venereal hospital on or before the eighth day of

treatment according to orders was only 13, comprised as follows:

Uncomplicated failure	7
Complicated (bubo 1, epididymitis 5) ...	6

Up to early September, that is, with 498 cases, cure was determined by the absence of subjective symptoms combined with a dry urethra or merely a clear watery secretion observed on massage and expression in the early morning before the patient had passed water.

Since that date the decision on physical signs as to cure of the remaining 244 cases has been supported by the microscope. Unfortunately, owing to the difficulty in obtaining counterstain, only the smears relative to 184 of the cases were stained by Gram's method. Smears of all these 184 cases were taken before water was passed on the mornings after the first, the third, and the fifth day of treatment, with the following results:

Number in which Gonococci were Found.

In smear taken on morning after the first day ...	148
In smear taken on morning after the third day ...	23
In smear taken on morning after the fifth day ...	1

(This case was considered a failure, and is included in the 7 uncomplicated failures mentioned above as having been evacuated to venereal hospital.)

Further, with this series of cases confirmed by the microscope, advantage was taken of an order to the effect that men cured of gonorrhoea would be retained in the dépôt for an observation period of nine days after cure. All 183 cases were examined and smears taken on the third, the sixth, and the ninth days of this period, and in no single instance was a return of the physical signs observed or were gonococci found.

Relapse.

Unfortunately I have been unable to trace my cases beyond twenty-four hours after their arrival at the dépôts to which they have been marched out. Nevertheless, it is worthy of note that, whilst it is an A.A.M.C. order that all men will be medically examined within twenty-four hours of marching into a dépôt and disabilities found reported, I have received official intimation of only nine of my cured cases having relapsed. Most of my cases proceeded to France, and the question of a fresh infection would have to be considered.

Advantages of the Method.

Apart from the encouraging results, only seven uncomplicated failures in 742 cases (183 out of 184 proved by at least four negative smears in each case), the method has in addition the following advantages:

1. The ease and simplicity with which it can be carried out.
2. It is comfortable and soothing to the patient, alleviating the sensation of wanting to pass water, and there is much less tendency to painful erections which characterize the condition under irrigation methods.
3. It reduces irrigation and syringing during the acute purulent stage to a minimum, and thus lessens the risk of driving the infection into the posterior urethra or further.
4. It does away with the leakage of the discharge at the meatus and thus obviates the possibility of troublesome balanitis. This condition did not occur once in my series of cases.
5. On withdrawal a definite pattern on the pack or the adherence of mucus or shreds will often indicate local areas of disease.
6. It has an economic advantage over other methods, much less silver solution being required.

I am of opinion that by specially designed speculum or introducer, infection of the posterior urethra could be treated to advantage in similar manner.

ACCORDING to a bulletin published by the Health Department of Chicago, among the ten principal cities of the United States, Pittsburgh had the lowest death-rate from tuberculosis for the year 1917, the rate being 147.05 per 100,000 of population. Chicago stands second with a death-rate of 148.37 per 100,000. Next come Detroit with 160.66, Boston with 170.87, New York with 176.75, Cleveland with 174.7, Los Angeles with 199.42, St. Louis with 202.95, and Baltimore with 236.61.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

TREATMENT OF INFLUENZA AND INFLUENZAL PNEUMONIA.

IN view of the recrudescence of influenza, and especially of cases complicated with pneumonia and bronchopneumonia, I beg to suggest methods of treatment which I found satisfactory in a large majority of cases.

In cases of influenza, even if severe, I prescribe the following:

℞ Sodii salicylas (B. W. and Co.) ...	gr. vij–x
Sp. ammon. aromat.	♏ x
Sp. chloroformi	♏ x
Tr. belladon.	♏ v–vij

Every four hours.

The belladonna has an excellent effect in removing the frontal headache. If there is an irritable cough, I add to the dose 5 minims of antimonial wine. Under this treatment cases usually pursue a normal course. The state of the bowels must of course be attended to, and the patient kept in bed for forty-eight hours after the temperature becomes normal.

If pneumonia or bronchopneumonia sets in, the latter so often double, my internal treatment is 5 to 7 grains of ammonium carbonate with 3 to 5 minims of tincture of strophanthus. If symptoms arise indicating fibrillary action of the right auricle, I add 5 minims of tincture of digitalis to each dose. I place most reliance, however, on the external treatment, which consists in the free application of turpentine. It is mixed with hot water, and flannels soaked in it are applied round the chest walls.

The solution must be strong enough to produce a glow and a tingling effect with some redness of the skin. The turpentine obtainable now is of poor quality; the quantity mixed with the hot water, therefore, must be increased.

Directly after applying the turpentine a well-fitting pneumonia jacket made of Gamgee tissue is put on. The turpentine fomentations must be repeated sufficiently often to keep up a glow on the skin.

If a good nurse is not available, the patient could be rubbed with warm turpentine, and the pneumonia jacket afterwards put on. Under this treatment the patients experience a great sense of relief; respiration becomes less laboured; the delirium so often present, especially in double pneumonia, subsides, and the patient sleeps better. Recovery often takes place in very critical cases. Turpentine capsules given internally do good, but patients often revolt against them after a few have been swallowed.

Bournemouth. A. HUMPHREY DAVY, M.D., M.Ch.

Reports of Societies.

PERIODICITY OF MEASLES.

AT a meeting of the Section of Epidemiology and State Medicine of the Royal Society of Medicine on February 14th, the President, Lieut.-Colonel E. W. GOODALL, R.A.M.C., in the chair, Dr. BROWNLEE gave an account of the results of an investigation into the periodicity of the epidemics of measles in the large towns.

The Method of the Periodogram.

He began with a brief description of the method of the periodogram analysis as applied to the discovery of periodicities in series of statistics. In general, if one periodicity only existed, ordinary inspection associated with a process of trial and error was quite sufficient to determine the periods accurately. As an example of this, sunspots were quoted. In certain towns, such as Aberdeen and Paisley, the only period for measles existing for very considerable stretches of years was quite obviously two-yearly, but when several periods existed, especially if one period were more important than a second, it was often impossible accurately to determine the second by mere inspection, while if three or more periods existed, inspection was useless. The method of the periodogram was essentially a method which examined all periods. The first person seriously to consider periodicity in disease was

Dr. Ransom. Since the publication of his paper in 1882 little further advance had been made. The author's investigation into this subject began five years ago, and as it had been possible to put a staff practically constantly on to this work, it had been feasible to analyse a large portion of the statistics accumulated in this country during the last forty years.

London.

The most complete statistics were those for London; they ranged from 1838 to the present day, the number of deaths from each infectious disease being given weekly during that period. These figures were analysed after suitable correction for the increase of the population had been made. It was found that the main period of measles in London was 97 weeks, but other periods were found—namely, 87 weeks, 89 weeks, 105½ weeks, 109½, and 114 weeks. These periods, though only half as important as the main period of 97 weeks, seemed to be quite undoubtedly present. The second part of the investigation referred to the districts of London. From this part of the investigation several important points emerged. It was found that the 97 weeks' period existed in all districts of London, but was especially well marked in the West End. The 87 weeks' period, on the other hand, was to be found solely to the south of the Thames. With regard to the other periods, definite location such as this was not so obvious. One important difference, however, came out, and that was that the epidemic of 97 weeks' period showed no evidence of spreading from one district to another, but that the epidemic, on the average, broke out at the same time in all the districts of London. Even when these districts were divided into parishes the same phenomenon was found to hold. Quite a different phenomenon, however, occurred with reference to the 87 weeks' period. In this the epidemic seemed to start in St. Saviour's and spread to the neighbouring parishes, the epoch of the maximum of the epidemic being later and later as the distance increased from St. Saviour's. As the epidemic extended to the periphery the number of people at measles ages attacked became progressively smaller. Thus the epidemic tended to end because the organism lost its power of infectivity rather than because the number of persons was exhausted.

Provincial England and Scotland.

The third part of the investigation referred to the great towns of the country—Liverpool, Manchester, Sheffield, Birmingham and Bristol, Edinburgh, Glasgow, and Dublin. Several curious facts emerged from this study. First, that the 97 weeks' period so marked in London seemed to be represented elsewhere by a period of from 97 to 98 weeks.

This period was very well marked in Edinburgh, Glasgow, Birmingham, and Bristol. In the same way in Glasgow there was a very marked period of 109 weeks, which was also present in Edinburgh and in Birmingham but absent from Bristol. There was also in Glasgow a small 88 or 89 weeks' period, and in Birmingham this was represented probably by an 86 weeks' period. The resemblance of Edinburgh, Glasgow, and Birmingham was exceedingly marked, and it could only be said that this concordance of phenomena, combined with those found in London, led to the very strong presumption that these periods were real phenomena. In Liverpool, Manchester, and Salford the range of periods was somewhat different. In Liverpool the main epidemic had a 92 weeks' period with a subsidiary epidemic every 100 weeks. In Salford there was a period of 92 weeks with a subsidiary period of two years.

In Manchester the periods were not so well marked, but resembled those of Salford rather than those of Liverpool. Bristol showed, as well as the 98 weeks' period, a period of 114 to 115 weeks. Thus the phenomena of London were reproduced in the provinces, the periods being essentially the same; the variation was not more than that found in the great London period of 97 weeks, which, when the seventy-two years were divided into four periods of eighteen years, ranged from 96 to 98 weeks. The two-yearly period was not shown in the big English towns except in Manchester, Salford, and Sheffield, though possibly present to some slight extent in Birmingham. It was absent from London and the rest of the great towns. It was, however, a real period; it existed at present in Aberdeen and again in Paisley; in other places it had been present for considerable epochs.

Persistence of Periods.

The persistence of periods was a phenomenon of importance. If due to a special strain of organism the period might die out and be replaced by some other, and this was apparently what took place. There was no evidence of a 97 weeks' period prior to 1840. Judging from the Bills of Mortality, the permanent period before that date was two years. This had completely disappeared and been replaced by a 97 weeks' period. The 98 weeks' period had certainly been introduced into Glasgow since 1870. Before that, as far as the statistics went, the 109 weeks' period appeared to give rise to the main epidemics. Paisley, a small town, might be taken as a typical example of this kind of change From 1856 to 1873 the epidemic had a two-yearly period. The period between 1874–1886 was somewhere about 89 weeks. This epidemic apparently disappeared, to be succeeded by one having a period somewhat over a year, though the existence of this epidemic from 1880–1895, being only for fifteen years, was not of sufficient length accurately to determine the period. Since 1898 the period had again been of two years, with one aberrant epidemic occurring in that time. Here, then, we had an example of epidemics dying out. A similar example was given by Aberdeen, where from 1856–1885 the main epidemics occurred at intervals of two and three-quarter years, and since 1892 had been rigidly two-yearly.

Seasonal Influence.

The best known example of the influence of season on the measles epidemics was that of London, where two maxima existed in the year—one in December and one in April or May. The compound curve, however, was very misleading. When it was analysed in periods of eighteen years from 1840 upwards, it was found that in the first two periods the winter maximum was much the more important; in the third period the two maxima were about equal, the one occurring practically about the end of the year and the other centring about the twentieth week.

With the fourth period of eighteen years the winter maximum remained at the same point, but the spring maximum had moved back until it centred about the thirteenth or fourteenth week. The seasonal distribution of measles was thus rather complex. For the last epoch in London, the one locally investigated, the seasonal distribution of districts was the same as for the whole town. When the other large towns were investigated it was found that in Edinburgh, Bristol, Birmingham and Sheffield, and Manchester, the spring epidemic was much the more important, while in Newcastle, Liverpool, Glasgow, and Salford the two seasonal epidemics were about equal. An epidemic culminating in May and June, as it did in London for the space of fifty years, could hardly, he thought, be due purely to climatic conditions. It might be suggested that this variation was due to the presence of types of measles which had a rigidly annual period. An example of this had not been found in this country, but for the last thirty years the epidemics of measles in Paisley had been rigidly annual, the maximum number of deaths occurring in the month of May. There was thus a suggestion that the so-called seasonal distribution of the epidemic was an accidental phenomenon due to epidemics of measles of essentially annual period. The subject, however, was of considerable difficulty and none of the ordinary solutions seemed to cover the statistical evidence.

PROBLEMS OF INDUSTRIAL ORGANIZATION.

AT a meeting of the Royal Statistical Society on February 18th, the Vice President, Sir BERNARD MALLET, K.C.B., in the chair, Captain M. GREENWOOD, of the Lister Institute, read a paper entitled "Problems of industrial organization," summarizing the researches into the physiological substrata of industrial organization made by Dr. H. M. Vernon, by the reader of the paper and his associates, and by other investigators appointed by the Health of Munition Workers Committee and by the Welfare and Health Section of the Ministry of Munitions. In the first section of the paper, dealing with the problem of industrial wastage, it was shown that an exact account of wastage could be rendered

by applying the fundamental principle of actuarial investigation—namely, by constructing a wastage table analogous to the familiar life table of vital statistics. Treated in this way, the data showed that the general rate of wastage was much smaller in factories possessing well organized welfare systems than in factories in general. Other conditions being the same, wastage among women increased appreciably with age at entrance when the labour was of a heavy manual type, the explanation being the twofold strain of married life and factory labour, since the differentiation began at an age too early for the explanation to be a real diminution of physical power, and corresponded to the time of life when the marriage rate increased rapidly.

In the next section of the paper the problem of feeding munition workers was considered, and allusion was made to the extensive data collected and published by the Earl of Antrim and Captain Greenwood. It was pointed out that further combined statistical and physiological work was necessary upon the subject of the nutrition of industrial workers.

In the next section of the paper the subject of night work in factories was considered, and the evidence collected by Dr. Vernon, by Captain Greenwood, and by Mr. Burchell, demonstrating that continuous night work was prejudicial both to health and output, was summarized.

In the following section the important work of Dr. Vernon showing that in certain processes shortening the hours of labour was followed by an increase of both relative and absolute output was described. The work of Dr. Vernon displaying the general factors of accident causation—namely, the influence of fatigue and of unsuitable temperature—and that of the reader of the paper upon the personal element in accident causation, was next illustrated. In the concluding section Captain Agnew's observations upon the apparent deterioration of physique associated with long hours of labour in both men and boys was noticed. Captain Greenwood finally commented upon the paucity of data relative to the physiological side of industrial organization, and expressed the not too confident hope that this lacuna would ultimately be filled up.

Reviews.

THE STATICS OF THE FEMALE PELVIC VISCERA.

FOR some years past the name of Dr. R. H. PARAMORE has been familiar to gynaecologists as that of a careful student of the anatomy and physiology of the pelvic floor in the female, and in particular of its functions in connexion with the maintenance of the position of the uterus and other pelvic viscera. His theme, which was developed in a series of papers and lectures in the six years preceding the war, is, briefly, that the main factor in that maintenance is the muscular diaphragm of the levator ani and coccygeus muscles on each side, and, contrariwise, that the so-called ligaments of the uterus have no suspensory or supporting functions.

In a volume he has now published Dr. Paramore discusses *The Statics of the Female Pelvic Viscera*[1] exhaustively. The different views upon the subject, which have from time to time influenced gynaecological opinion and in great measure governed gynaecological action, are set forth with the arguments in support of them. The latter are then demolished one by one until each theory collapses in turn.

Dr. Paramore is particularly anxious to dispel any belief in the function and even in the existence of what he calls the "ligamenta transversales coli" (*sic*). Fortunately his arguments are better than his Latin.

We believe that to a great extent Dr. Paramore is preaching to the converted. The broad, the round, and the utero-sacral ligaments have all lost caste, and even the position of the uterus itself is no longer regarded as a matter of fundamental importance. But there are gynaecologists who believe and teach that the uterus is partially supported by the parametric connective tissue which is attached to the cervix on each side. Dr. Paramore regards this view as the last stronghold of the ligamentary heresy, and tilts with great earnestness against it and against those who uphold it.

This is a book of nearly four hundred pages of closely reasoned writing, and another volume is foreshadowed which will deal with the evidence of surgery on the points at issue. As much of the matter dealt with in this first volume is familiar to every gynaecologist, it is not improbable that the second volume will in due course prove the more interesting and the more convincing of the two. It is not a book that is easily read, but it repays perusal, and should be studied by all gynaecologists who are unconverted but open to conviction.

We wonder whether even Dr. Paramore hopes to convert Dr. W. E. Fothergill of Manchester with this volume, or is he relying on the second volume to set this crown upon his labours?

[1] *The Statics of the Female Pelvic Viscera.* By R. H. Paramore, M.D., F.R.C.S., Major R.A.M.C. (temp.). London: H. K. Lewis and Co., Ltd. 1918. (Demy 8vo, pp. xviii + 383; 26 figures. 18s. net.)

MEANS FOR THE CONTROL OF INFLUENZA.

THE Local Government Board has issued a Memorandum on the prevention of influenza which, if the public will read it, ought to do a good deal, if not to prevent its spread, at least to check the mortality from respiratory complications.

It is hoped that the recent order which has now made acute influenzal pneumonia, as well as acute primary pneumonia, compulsorily notifiable throughout England and Wales, may be of value by rendering it possible to bring aid in their homes to sufferers from secondary pneumonia. Where the experiment of opening one or more wards in an isolation hospital for the reception of cases of influenza with pulmonary complications has been tried it has been uniformly successful. In hospital a patient should be isolated by screening or otherwise, and, as cases of influenza with pulmonary complications bear removal badly, it should only be attempted with the concurrence and under the supervision of the medical practitioner in attendance.

It is frankly said that "the epidemic cannot be stopped," and that the most important work for sanitary authorities is the organization of the available nursing service and the provision of assistance to influenza-stricken households, both by nurses and by "home helps," to do cooking and take care of children. The authority is advised to appoint a small emergency committee to act with the M.O.H. and to consult with medical practitioners and any voluntary health agencies in determining the practical methods to be adopted. The town or district should be divided into areas, each with one or more trained nurses to act under the direction of medical practitioners. Specimens of leaflets to be issued to the public are given.

THE MASK IN INFLUENZA.

In the Memorandum it is said:

On present knowledge the public is not advised to make a general use of face masks during a period of influenza prevalence. Face masks, however, should be used as much as possible by those attending on the sick. A mask to cover the nose, mouth, and chin may be improvised out of three layers of butter muslin, 8 in. by 5 in., provided at the corners with tapes for fastening at the back of the head; or about half a yard of gauze may be used for the same purpose, folded as a triangular bandage. A sufficient number of face masks must be available, so that they can be frequently changed and washed. It is desirable at the same time to protect the eyes by wearing goggles or glasses.

American Army Experience.

We are indebted to the kindness of Colonel A. M. Whaley, Medical Corps, U.S.A., liaison officer in this country, for the following very interesting information, supplied by Colonel Washburn, Chief Surgeon, Base Section No. 3, London, who has had before him data on all cases of influenza which arrived in this country from the United States.

Colonel Washburn says that it is hard to decide the value of the prophylactic mask in the recent influenza epidemic, and continues as follows:

Theoretically, of course, it should be a valuable prophylactic measure. Existing regulations of the Chief Surgeon, American Expeditionary Force, require that all patients in wards be cubicled, and that all attendants, doctors, nurses, and visitors be required to wear masks, both in hospitals ashore and on transports. No regulations at present, so far as known to me, require large bodies of troops, either ashore or on transports, to wear gauze masks.

The ss. *Olympic* arrived at Southampton on September 21st, 1918, with 146 officers and 5,828 other ranks; 573 cases of influenza and pneumonia were put ashore, and within a week over 1,000 additional cases occurred among these

troops. About 300 deaths occurred among these cases. Gauze masks were not worn on this trip, and this was the first ship carrying American troops to have an outbreak of influenza in the epidemic wave occurring last fall.

On the next trip of the *Olympic*, carrying 5,430 troops leaving New York October 17th, arriving October 24th, during the height of the epidemic, only 34 cases of influenza and pneumonia were put ashore. Troops proceeded at once, so we have no record of further cases occurring. Gauze masks were worn by the entire personnel of the vessel. It was believed at the time that the wearing of these masks was responsible for the great reduction in the number of influenza cases. However, it was learned later that those carried on this trip were rigidly inspected at the port of embarkation, and that temperatures were taken, and all cases showing fever were not permitted to sail. The first case of influenza occurred on the third day out, and measures for prompt isolation were at once enforced. The number of troops carried was only slightly less than on the previous trip. Since influenza was raging at home at that time, and no known cases were permitted to go aboard, it is possible that a considerable percentage of those troops were immune, or had passed through a mild attack. Considering this, and the prompt isolation measures established aboard the vessel, it is possible only to theorize as to the actual value of the masks.

During the height of the epidemic quite a number of the convoys arriving at Liverpool were heavily affected. After the seriousness of the epidemic was appreciated in the United States, and the surgeons aboard instructed concerning the same, the later convoys arrived with far fewer cases; these convoys did not wear masks.

Gauze masks are placed aboard all transports returning to the United States, to be used if necessary.

THE MINISTRY OF HEALTH.

THE JOINT COMMITTEE OF THE ROYAL COLLEGES IN ENGLAND.

THE Joint Ministry of Health Committee of the Royal Colleges of Physicians of London and the Surgeons of England has issued the following memorandum:

Now that the Bill for the establishment of a Ministry of Health has been reintroduced, it may be well to record the steps taken by the Royal College of Physicians of London and the Royal College of Surgeons of England to place before His Majesty's Government the conditions they conceived to be essential in such a bill. Early in July last the Royal Colleges appointed a Joint Committee with power to co-opt other members.

The Committee at once co-opted the President and two other members of the Society of Medical Officers of Health, and later the Committee was augmented so as to include certain members from the provinces.

The members of the Joint Committee are: Dr. Norman Moore (President of the Royal College of Physicians), Sir George Makins (President of the Royal College of Surgeons), Lady Barrett, M.D., Sir John Broadbent, Sir Bertrand Dawson, Dr. Herbert French, Dr. W. H. Hamer, Sir Robert Jones, Dr. H. R. Kenwood, Sir Berkeley Moynihan, Dr. J. A. Ormerod, Dr. John Robertson, Mr. Charles Ryall, and Mr. H. J. Waring.

The Home Secretary (now Viscount Cave of Richmond), with other members of the Home Affairs Committee of the War Cabinet, on July 29th received a deputation which submitted certain proposals, including the appointment by the Minister of an Advisory Body specially qualified to consider medical questions, the right of such body to meet frequently and to have direct access to the Minister, the equal representation on that body of curative and preventive medicine, and with a view to providing that the best opportunities for the prevention of disease and for the maintenance of health should be available for every member of the community.

The Committee considered at many meetings the conditions it conceived to be essential to any scheme for setting up a Ministry of Health, in so far as it concerned England and Wales; it was considered that the profession in Scotland and Ireland would more fittingly deal with those portions of the United Kingdom.

While realizing the difficulties there would be in gathering together the health departments at present scattered through various Ministries under one head, and effecting disentanglement from the Poor Law, the view was strongly held by the Committee that if the Health Ministry is to take a wide outlook and be as little restrained as possible by established tradition and habit, it should not be more associated with any existing Government department than is absolutely necessary to secure efficient organization. In the opinion of the Joint Committee, the aim of any sound health policy must be to render available the best opportunities for the prevention of disease and the maintenance of health for every member of the community.

Considering that a large proportion of the work of the Health Ministry, both as regards its policy and its execution, will depend on the knowledge and co-operation of the medical profession, the Joint Committee considered it essential that there should be appointed by the Minister of Health an Advisory Medical Council, drawn from every section of the profession, such Council to have direct access to the Minister and the power to initiate advice.

Since there will probably be other advisory councils besides the Medical Advisory Council, the Joint Committee are of opinion that there should be a connecting committee in the Ministry for the correlation of the work of the advisory councils in order to prevent overlapping and conflict of advice.

The Medical Advisory Council, to be of real use to the Minister and through him to the nation, must be of limited size—say, twenty-one members. It cannot, therefore, be representative of the members of the medical profession in the parliamentary sense. Its members must be not only individually excellent, but such as will together constitute a good council of advisers.

To this end the Joint Committee laid down the principle that in selecting the members of this council, greater regard must be had to special attainments and experience than to interests and organizations as such.

Subject to this primary aim, an endeavour should be made to represent the individual members and the corporate life of the profession.

In addition to the Home Affairs Committee, the Joint Committee were later received by the Minister of Reconstruction, Dr. Addison, for the purpose of explaining and urging these views. The Committee desire to record with satisfaction the sympathetic hearing and large measure of assent given to their representation.

Conferences between the representatives of the Joint Committee of the Royal Colleges and the representatives of similar committees of the Royal Society of Medicine and the British Medical Association have been held for the consideration of these important questions relating to the proposed Ministry of Health. At these conferences there has been substantial agreement, a fact of great importance in view of the large body of medical opinion these three bodies together represent.

The Joint Committee will continue their deliberations with a view to helping in the formation of a sound national health policy.

THE GENERAL MEDICAL COUNCIL.

The Executive Committee of the General Medical Council, at its meeting on February 24th, adopted the following resolutions, which were forwarded to the Lord President of the Council for communication to the Government:

1. That the Executive Committee observe with regret that the bill does not extend to the whole of the United Kingdom, as was urged in the resolution of the General Medical Council of November 30th, 1918; and that the Executive Committee presses on the Government the importance of introducing legislation corresponding to that proposed for England and Wales, and for Scotland, appropriate to the special conditions obtaining in Ireland.
2. That the Memoranda No. 1 and No. 2, laid before the Executive Committee by the Irish Branch Council, be transmitted to the Lord President for his information.
3. That in view of the very varied medical functions devolving on the Ministry of Health in Scotland, including measures for the prevention and cure of diseases, the treatment of physical and mental defects, the collection and preparation of information and statistics relating thereto, and the training of persons engaged in health services, the Executive Committee is of opinion that not less than one-third of the members of the Scottish Board of Health should be persons who are registered under the Medical Acts.
4. That the Executive Committee welcomes the introduction into the bill of Clause 3 (2) (d), whereby the powers and duties relating to public health, now exercised by Government departments other than those expressly mentioned, may by Order in Council be transferred to the Ministry of Health; and that it is desirable that the General Medical Council should before they are issued have an opportunity of considering the several draft Orders in Council so contemplated for the transfer of such medical powers and duties.

THE MEDICAL PROFESSION AND TRADE UNIONISM.

ANOTHER "mass meeting," to consider what the convening circular described as "the crisis in the medical profession," was held at Wigmore Hall, London, on Sunday, February 23rd. The meeting on this occasion was called by the Council of the Medico Political Union. Dr. FRANK COKE, of Ashford, presided over an audience numbering some three hundred.

Dr. J. A. ANGUS moved, and Dr. STANCOMB seconded, the following resolution:

> That in view of the far-reaching changes inevitable in the medical services of this country consequent on the coming Ministry of Health, it is essential that the profession should be solidly and democratically organized on a trade union basis to enable it to negotiate effectively with the Government in the interests of the community no less than those of the profession.

Dr. R. DUNSTAN (Fulham) moved an amendment, seconded by Captain MORGAN, R.A.M.C., of Epsom, deleting the words "on a trade union basis," and inserting "as a trade union affiliated to the Labour party and the Trade Union Congress."

Dr. R. FIELDING-OULD said that the profession was not prepared at the present moment to accept trade union principles, and Mr. BISHOP HARMAN that the great trade unions were powerful because of the mass influence they were able to exert. Dr. ALEX. MORISON also opposed the resolution, deprecating the intrusion of the "cash" spirit into the discussions. Speeches in support of the resolution were made by Dr. COODE ADAMS, Dr. S. F. HOLLOWAY, and Dr. JOHN CLARKE (Woolwich).

The proposer and seconder of the original resolution refused to accept the amendment, on the ground that the profession must not ally itself with any party. The amendment was lost by a large majority, and the original resolution was carried by 207 votes to 30.

THE NAVAL MEDICAL SERVICE.

THE CASE FOR REFORM.

AMONG the many communications we have lately received from naval surgeons on the future of the Royal Naval Medical Service, the following notes, contributed by a senior medical officer, contain criticisms and suggestions that seem worthy to be placed on record.

The writer begins by drawing attention to the serious plight in which the Naval Medical Service will be, through lack of junior medical officers, after peace is declared and the many temporarily employed surgeons are demobilized. While it may be possible to tide over a few months by retaining a number of temporary and R.N.V.R. medical officers, they cannot be held indefinitely. It is an open secret, he says, that scarcely any of these 900 officers have signified their intention of joining the permanent service after the war. No permanent surgeons have been entered since 1914, and the number of surgeon lieutenants is now little over 70; before the war the establishment of fleet surgeons, staff surgeons, and surgeons was 574. At this rate, he argues, the service would soon consist of "many generals and no army."

Existing Defects.

The writer then discusses, under three heads, the reasons why the Naval Medical Service as at present constituted fails to attract young medical men.

Professional Work.—Since the fleet is manned by a body of men carefully selected for their physical fitness, and there are (except in marine barracks and a few other places) no women and children to be treated, it follows that there is seldom enough work in a warship in peace time to keep even one man fully employed. A general practitioner with the number of patients each day that the average warship can produce would not make a living. There is also very little opportunity at present for special work and none at all for operative work except in emergencies and at hospitals. The result is that the medical officer grows rusty before his time. Thus the service does not offer a keen man the opportunity he would naturally expect. He may serve more than twenty years and never have the luck to get a good professional appointment in a naval hospital. On the other hand, after fifteen or twenty years' service, he may be suddenly posted to a special appointment and realize how unfitted he has become through no fault of his own.

Relation to Other Branches.—A medical officer is not long in the service before he finds out the great gap there is between the executive and non-executive branches. Even when in an independent appointment he has none of the privileges of the executive officer.

Executive officers usually retire with a step in rank, and are often promoted automatically after they have retired. Medical officers do not as yet share this advantage to the same degree. Again, every admiral, captain, or commander in charge of a naval establishment has a steamboat for his own use. A medical officer as a rule has not, though he may be allowed a pull boat, or dghaisa.

The compound titles recently introduced are cumbersome, and disliked by many medical officers. It would be better to grant the simple rank and title lieutenant, commander, captain, and so on, with the letter (M) in brackets. Compound titles have been abolished in the R.A.M.C. and I.M.S., and are not used in the R.A.F.

Pay.—The young medical man, if he looks ahead, will see that as a surgeon commander he will draw from 28s. to 35s. a day, but as a lieutenant-colonel R.A.F. he would be paid 35s. to 45s. a day. The present rates of pay for every one below an admiral are absolutely inadequate. Not until he joins the service does he understand the dreadful meaning of "half pay." To find oneself through no fault suddenly put on half pay with a family growing up, school bills and house rent to be paid, is a nightmare to all senior officers.

Suggested Remedies.

The writer then discusses under similar headings the improvements which, in his opinion, might be made in order to attract the right kind of medical man to the service.

Professional Work.—Assuming a shortage of clinical material, that material should be shared more equitably—for instance, by a fairer distribution of appointments. At present some men get into hospitals and serve the greater part of their time in these desirable professional appointments. It is unfortunate that the best appointments for medical officers are always on shore while those for executive officers are generally afloat, because if a medical officer asks for a hospital he is liable to be suspected of desiring the house and emoluments that go with a hospital appointment (though a house is by no means always available); whereas an executive officer, if he desires a good professional appointment, must often ask to be sent to sea.

Specialists should be appointed and men should be encouraged to qualify in special subjects, extra pay and more or less permanent appointments, alternately afloat and ashore, being offered. As subjects for specialism the following might be mentioned: Surgery, medicine, *x* rays, anaesthetics, physical training, ophthalmology, ear, nose, and throat work, administrative work, statistical work, venereal diseases.

Study leave or courses of instruction are already granted, but they might be extended with advantage, and instead of the iniquitous system of putting a man on half pay he should be given study leave on full pay if for any reason no appointment is available for him at the time. Exchange of appointments should be allowed when it is clear that the public service would not suffer. (The R.A.M.C. has this privilege.) The principal medical officer of each fleet (at home or abroad) should be a surgeon captain. Transport arrangements for sick and wounded should always be under the control of a medical officer.

Promotion.—Promotion to the rank of surgeon lieutenant commander should be given after six years, and to that of surgeon commander after twelve years. Promotion to surgeon captain should be by selection. The number of surgeon captains and surgeon rear admirals should be increased. Acting promotion should be granted more freely: it is very rare indeed for a medical officer to get acting promotion, though he may hold an appointment intended to be held, and perhaps held before, by an officer of the rank next above his own. In similar circumstances an executive officer almost always gets acting promotion. Accelerated promotion should be given for good work. Promotion after retirement should be granted on the same lines as to executive officers. At present the surgeon commander when he attains that rank is usually older than any newly promoted commander in other branches.

Pay.—The pay of all medical officers must be increased to meet the cost of living and to level their income up to that which they could earn elsewhere. The estimate of the Government statisticians is that the cost of living is now more than twice what it was in 1914. Gratuities should be granted on retirement after 4, 6, 8, 10, 12, and 14 years of service, the rates being proportionately higher than are at present paid at 8, 12, and 16 years. Charge pay should be increased.

The following facts relative to the pay of medical officers should be taken into account when the future rates are settled: (1) Before entering the navy the young medical man's education has been far more costly than that of the youth who joins any other branch, with the sole exception perhaps of the chaplain, whose miserable pittance is a byword in the service. (2) The medical officer cannot, as a rule, join the service till he is 23 to 25 years old and has usually been an expense to his parents for most of that time. (3) The service educates the executive officer and the engineer and in consequence pays them less, but it does not educate the medical officer, and should therefore pay him more. There is thus every reason for paying the medical officer at a higher rate than the executive or engineer officer, but possibly none for paying him more than the chaplain or the naval instructor

Rank and Command.—Medical officers should have power, in their own branch and in dealing with their own officers and men, equal to that of executive ranks. In every ship the senior medical officer should have power of punishment as a "second in command," and in independent commands (hospitals and hospital ships) he should have the same powers as an executive officer "in command." The invidious rule which makes a surgeon commander always junior to a lieutenant-colonel in the other three services (R.A.M.C., I.M.S., R.A.F.) should be done away with by making all commanders (of whatever branch) rank with lieutenant-colonels according to their relative seniority. Whenever a medical officer or rating is tried by court-martial a senior medical officer should always be a member of the court.

The vice-admiral (M), rear admiral (M), or captain (M)—to give them the titles suggested—in command of a naval hospital or establishment should have the same privileges as an officer of the corresponding executive rank, such as steamboat and allowance for servants.

Pensions.—There should be optional retirement after sixteen years' service, on pension, and the pension rates should increase in proportion to the exact number of years' service, and not remain the same for four years at a time. Pensions and widows' pensions and children's compassionate allowances should be increased to meet the new cost of living. Half-pay should be abolished except as a punishment or when granted at the request of the officer. An officer retired at his own request, or to facilitate promotion of others, or under an age clause, should be granted the next higher step in rank.

MOTOR NOTES FOR MEDICAL MEN.

By H. MASSAC BUIST.

The Sure Way to Obtain Motor Fuel Licences.

Medical men who are experiencing any difficulty in obtaining fuel licences, or supplementary ones, and who are members of the Royal Automobile Club or the Automobile Association, should communicate with one or the other of those bodies, which have been requested by the Petrol Control Department to take up the matter, presumably with a view to expediting the work of licence issuing. Doctors' attention may also be drawn to the campaign initiated by the *Motor* to protest against the continuance in another form of the super-tax of 6d. per gallon on petrol, because it concerns them in that they pay a half-share of all peace-time imposts on motor fuel. Forms may be had on application to 19, Rosebery Avenue. Doctors should get all their motoring patients to append their signatures also, in that, unless there is a very wide protest, it is extremely unlikely that the Chancellor of the Exchequer will impose less than a 1s. fuel tax next Budget. Yet, with a gallon of petrol costing more than the pre-war price of a bottle of whisky, the individual medical man, who under taxation schemes has certain privileges over ordinary motorists, is paying far too dear for his motor fuel. Moreover, the more motoring in general is restricted in these islands, the relatively dearer it is for the medical man. The story of all locomotion movements, as well as of ordinary commerce, is that the bigger the scale on which you establish each, the cheaper the cost to the individual participating. It is therefore a matter of direct interest to the individual medical man to see to it that the motorists among his patients are enlisted in this campaign of public protest against the extortionate prices to which fuel and fuel licensing and taxation schemes have driven it to-day.

The Petrol Control Department's premises are advertised for sale "with early possession." Therefore, it is to be presumed that the department will cease to exist at the end of April, when the current licences run out. Obviously it would cost less to the Government to slip the extra 6d. a gallon tax on the cost of the petrol to the user at the time he is purchasing it in the ordinary way instead of involving all the paper wasting and clerical costs of running a separate department to raise a supplementary tax, as being another name for dividing up work that has already been provided for.

The Benzol Situation.

The Government has acted wisely in connexion with benzol to announce that the ordinary tax will be imposed on it if it is marketed by the oil companies. But the theory is more attractive than the actual practice. One of the chief reasons of the proportionately high cost of motor fuel, even in peace time before we had war costs to pay, was in its distribution in retail. The organizations, with their tremendous ramifications, cost an enormous amount to establish. Therefore it would actually be an act of economy if existing organizations could be used to distribute benzol, provided some control were kept over the matter by the Government. It may be admitted that, theoretically, it would be better that the organizations selling benzol were rival concerns; but can it be imagined that they could continue so in anything but name? What is to prevent the oil groups, with all the financial and practical experience they possess, forming separate companies and running benzol just as they run oil, or, if entirely different groups started benzol companies at a later stage, buying their shares and coming into control of them in that way? Meantime, the enterprising "Shell" oil concern announces the sale of benzol to its customers, who are then not kept waiting for distribution facilities.

It is eminently desirable that the use of natural benzol should be encouraged. The Government should draw up very stringent regulations whereby the public will be assured against the possibility of buying under the name of benzol that which is in effect "denatured" benzol, such as was used at one period of the war; it is distinctly destructive of engines, having in it certain chemicals in substitution of ingredients withdrawn for the making of explosives during the campaign. By contrast, natural benzol should prove very satisfactory.

The National Benzol Association's Specification.

An organization styled the National Benzol Association, whose membership, however, does not embrace all those producers who collectively are distilling something like 21,000,000 gallons of benzol in this country a year, has done well to issue the following specification of benzol for use as motor spirit, because it ensures something like a standard grade quality being supplied to the public by members of the association; it contains necessary provision against freezing, in that benzol crystallizes at 18° F.; and it allows a negligible amount of sulphur only to be embodied in the fuel, so that there is no danger of corrosive action to the engine. The points are as follows:

1. Specific gravity: 0.870 to 0.885.
2. Distillation test (by flask). Benzol shall give a distillate of not less than 75 per cent. to 80 per cent. at 100° C. Benzol shall give a distillate of not less than 90 per cent. at 120° C. Benzol shall give a distillate of not less than 100 per cent. at 125° C.
3. Sulphur: The total sulphur shall not exceed 0.40 per cent.
4. The benzol shall be entirely free from water.
5. Colour: water white.
6. Rectification test: 90 c.cm. of the sample shaken with 10 c.cm. of 90 per cent. sulphuric acid for five minutes should not give more than a light brown colour to the acid layer.
7. Benzol shall be entirely free from acids, alkalis, and sulphuretted hydrogen.
8. Benzol shall not freeze at 25° F. below the freezing point of water.

The Automobile Association is taking the keenest interest in the recovery of benzol from gas works, and is alive to the proposal of the subcommittee of the City Council and of other bodies to approach the President of the Board of Trade concerning the alleged hardships imposed on gas consumers during the war owing to gas companies having "scrubbed" their gases for benzol. It seems to be generally agreed that scrubbing to a moderate extent, while recovering a large quantity of benzol, only affects the calorific value to somewhere about 5 per cent. As regards illuminating power, the difference where incandescent mantles are used is quite insignificant. In view of this, it is strongly felt that, far from gas companies being deterred from continuing the process, they should receive every encouragement, both from the public and the Government, to continue an enterprise which has such an important bearing on the production of indigenous motor fuel. The production from gas works alone last year was over 6 million gallons. If all gas works scrubbed their gases, this figure could be increased by some 15 million gallons, making over 21 million gallons in all obtainable from coal. This amount is actually carbonized at the present moment, and the by-products are being wasted.

In America the much boasted "Liberty" fuel, which is supposed to be an entirely new motor spirit, turns out to be nothing very original, but merely a 65 per cent. mixture of benzol with nearly 30 per cent. of what the Americans call kerosene, or what we should call petroleum *plus* a small percentage of amyl acetate. This raises the question whether we could make combinations of fuels of that sort probably more cheaply in this country if the oil groups blended them, than by having benzol and oil marketed by

two distinct concerns, so that any organization desiring to place a blended fuel on the market would have to pay the oil and the benzol groups their profits before it could secure its supplies.

THE COST OF NEW CARS—AND A WARNING.

While the next six weeks should witness a considerable clearing up of the fuel situation, it should also see the first issue of post-war cars. The majority of firms have now announced the main features of the vehicles they will market during the spring and summer, though practically none will give definite dates for delivery. Since post-war models of cars of sizes and types likely to interest medical men were last dealt with in these pages, very much more definite information has been forthcoming as to prices. Unfortunately, these are all in the undesired direction. Pre-war values are absolutely no guide.

It may be asked how it is that manufacturers should not ask such higher prices as the high costs of labour entitle them to demand, since the net cost of producing a car in the post-war period is more than 100 per cent. over the pre-war cost. Increasing wages for the mining of coal, the shipment or other transport of ore, and so on, go through all the processes of producing the raw materials of motor manufacturing. When the matter is examined in detail in this fashion, the only matter for surprise is, not that type-for-type cars are 50, 60, and 75 per cent. dearer than they were in the pre-war time, but that they are not 100 per cent. or more dearer.

In very few cases that have come under review in the small and middle size car markets are machines being offered at double their former prices, though the medical man should be warned that here and there agents appear to have got hold of demonstration examples of post-war cars, and to be offering them for early delivery at utterly fancy prices. This is something for which the manufacturer is not to blame. Indeed, all the responsible firms are taking active steps to stop such an injury to their trade, but they cannot control the buying public. Therefore they plead that it should not further raise costs against itself by paying such prices for cars, manufacturers themselves never demanding such. The middleman alone makes such unauthorized profits in addition to the quite handsome ones allowed him by trade agreements.

Neither is the used car market at the moment to be understood. For example, a case came under review the other day in which a man paid over £500 for a 1914 Singer coupé, and in the middle-size class equally extraordinary prices seem to be realized. Yet if an owner endeavours to sell a used car, it turns out that his may be worth 20 per cent., at most, more than he gave for it at the beginning of the war; but in most cases £10 or so less than he gave for it.

NO CASE FOR DESPAIR.

Certainly motoring is going to cost the medical man much more in the immediate future than it did before the war, alike as regards the prices of his tyres and fuel and for the purchase and repair of his car. Therefore the best advice that can be given is: any medical man who has a vehicle at all up to date with which he can make shift should, not merely in the interests of his colleagues who may have no such standby, carry on with what he has until production has begun to meet demand; it is, besides, in the interest of his own pocket, in that, beyond, peradventure, from next November onwards we shall begin to see what designers will achieve towards reducing car costs in the light of what we shall not discover until Budget time in the matter of the taxation the Government is going to impose on the motoring movement.

None need despair, because an interruption of approximately five years has occurred in supplying the needs of the motoring public at large, with the inevitably resultant shortage. The increase in factory capacity the world over is such as to ensure that in about two years the manufacturers will have overtaken the public demand. Then there will be something of the nature of a world-wide slump in car production.

One might forecast it much earlier were it not for the fact that the bulk of the world's motor vehicles are produced and used in the United States of America, where statistics show that the average life of a motor vehicle is five years, and that in the course of that time two bodies will be worn out. When it is recollected that there is one motor vehicle in the U.S.A. for every eighteen inhabitants, it will be understood that even a large industry has much headway to make before it can catch up such a demand as is created by war prosperity on the one hand—America's national wealth has increased by at least 40 per cent., whereas her national debt is only 4½ per cent. of her total wealth—and on the other by the brief interruption of output due to concentration by motor manufacturers on munitions production. The Americans estimate that their home market will be short of cars for two years at least; this, however, does not mean that we shall not see the American industry very eager to do business in this country, because the Americans foresee that it must follow as the night the day that presently motor car production the world over must overtake demand. Therefore they want to get well set in their export markets for that time when they will want to bring wealth into their country and keep their industry going by export. Accordingly, during the next two years they will starve their home market, and even let foreigners do business there rather than neglect to utilize every opportunity to do export business. By the time American production can suffice alike for U.S.A. and export demands, the American makers can oust the foreigner from the States whenever they please.

Therefore, during the next two years or so we may expect car prices to be relatively high, though in Europe they must be brought down earlier than in the New World by reason of the impoverished state of the community of the Old World, leaving relatively a very small proportion of the population in the position to pay high prices for motor vehicles.

NOVELTIES NEXT NOVEMBER—AND NOW.

Medical men for whom a motor vehicle is a necessity are among the class which will necessarily refrain from buying vehicles at fancy prices, unless they are absolutely driven to do so. Those who can hold out for two years may rest assured that by that time, at the longest, new methods of designing and competition will have compelled at least a section of manufacturers to evolve cars that are cheap but can yet give good service. There is, however, no prospect of revolutionary design on the part of responsible firms during the 1919 production season. What will be shown at the Olympia Exhibition next November (7th–15th) will be machinery that for the most part will be produced in 1920. Therefore, at the moment that does not concern us.

Of course, scale of production has much to do with the cost at which a vehicle can be put on the market. The fabulous scale of American output to each factory is more widely known than the effectiveness of it is appreciated, since one cannot realize the thing unless one has been to factories and seen the work in progress. Then one really grasps what it means.

What has been done in Europe to counter this? In Italy the Fiat factory had between forty and fifty thousand hands during the war, and one of its great post-war propositions was to have been a four-cylinder light car marketed complete at about £200; yet within the last month the firm has abandoned the scheme altogether in favour of a large model policy. At base the change is due to the cost and temper of labour. In the meantime the company sees that it can sell more than all the large models it can turn out for a long time, so that the type most likely to be of use to the medical man is held up in the interval. With the lapse of time, however, shipping rates must fall, and so forth, so that gradually the hundred and-one factors which contribute to the current cost of a car will decline. In France, Renault employs twenty-five thousand men, but there is no confirmation of the fact that he is going to put a very cheap car on the market this summer, though he has some popular models in view. In France, however, a war-created organization formed by M. Citroen is aiming at mass production on a basis of some thirty thousand vehicles a year, the scheme being, of course, to embark on a cheap car, of which sufficient details are not available at the moment. It is expected that by April the output will be one hundred cars a day, to be retailed with standard body and complete equipment at from £200 to £360, with a four-cylinder engine of 68 mm. bore and 100 mm. piston travel.

(To be continued.)

British Medical Journal.

SATURDAY, MARCH 1ST, 1919.

ST. BARTHOLOMEW'S HOSPITAL.

Books have failed to secure success because the authors have chosen subjects far beyond their knowledge and power, but the *History of St. Bartholomew's Hospital*, by Dr. Norman Moore,[1] is a book requiring, it is true, vast knowledge, but written by one possessed of the requisite qualifications for an exacting task. The author and his subject are well met.

Many histories of venerable institutions have been written, but nearly all are open to the criticism that their authors have been unable to take a wide view; and too often have committed the fatal mistake of regarding the institution apart from the times in which it flourished. Lack of knowledge has generally been accountable for this failure, for no man is qualified to describe the rise and progress of an institution unless he has steeped himself in the history of its times. To write adequately the history of a great institution which, beginning in early mediaeval times, has continued with scarce a break until the present day, is the task of no common compiler of books. Five qualifications we conceive to be necessary for its accomplishment. The author must venerate the institution, and be a part of it; he must be a scholar; he must be an historian, and he must have strong antiquarian instincts. Finally, he must be capable of adjusting the balance nicely between these qualifications. All these attributes Dr. Moore possesses, and the fine book he has presented to St. Bartholomew's Hospital will enhance his reputation, already great, as a scholar, as an historian, and as a man of letters.

His history of the great City hospital must not be regarded as a mere account of the birth and growth of a splendid medical charity. It is that, but it is much more. Dr. Moore has struck the right note in his treatment of his subject. Taking St. Bartholomew's as an example, he has shown that medical charity and medical knowledge had their origin in the cloister, and were the outcome of the desire to help those in distress and suffering. What the mediaeval religious houses were to learning, so were they to medical knowledge—the custodians and repositories of the germs of those arts and sciences which have reached so enhanced a state at the present day. We may smile, if we please, at the way in which the religious houses discriminated between the learning that was worthy of preservation and that which should be rejected, but we can never be unmindful of the fact that when the whole world was sunk in the black night of barbarism, the *Scriptoria* of the religious houses were trimming the feeble light of knowledge until it could burst forth in the blaze which lit intellectual Europe in the seventeenth century.

Dr. Moore takes us back to the dark ages—to their very beginnings. With minute and unerring pen he pictures to us the foundation of an institution before the universities had taken definite shape, and his deep antiquarian knowledge sheds light on the dark places, and makes clear the early history of St. Bartholomew's Hospital. Materials on which to build are scanty, for the hospital was founded in 1123, and its early origins can only be extracted from contemporary charters and deeds. The facsimiles of these deeds have been beautifully executed, and we do not remember to have seen a book in which so much care has been bestowed on the reproduction of ancient charters and deeds. Their study would well repay the student of palaeography, for the forty odd examples given in the volumes may be regarded as typical of the charter hands of the twelfth and thirteenth centuries.

After relating the history of the foundation of the hospital, Dr. Moore goes on to describe the state of medical knowledge in those early days. At the beginning of the twelfth century learning in western Europe was at a low ebb, and although the members of religious houses could read, and in some cases were able to write, their range of knowledge was circumscribed. In the main five authors were relied upon to impart all the education required, and the works of Orosius, Martianus, Boethius, Cassiodorus, and Isidorus came to be the textbooks of the schools. The Greek tongue was unknown, and the portions of Aristotle dealing with logic, which alone were read, were studied through questionable Latin translations. Soon after the foundation of the hospital Peter Lombard wrote his *Sententiae*, and that great work, supported and elaborated by St. Thomas Aquinas, Duns Scotus, and William of Occam, became for three centuries the theological textbook founded on an appeal from authority to reason. As Dr. Moore shows, the only medical book open to those who attended the sick in the early days at St. Bartholomew's was the fourth book of the *Liber Etymologiarum* of St. Isidore of Seville. Its range was not wide, and it is probable that the brethren of the hospital derived their medical knowledge far more from observation at the bedside.

Two centuries after the foundation of the hospital a more extended range of medical literature became available, and Dr. Moore gives a most scholarly account of John Mirfield and his *Breviarium Bartholomei*, which was written before 1387. Mirfield's name is the first connected directly with medicine to appear on the roll of St. Bartholomew's, and, as Dr. Moore points out, his *Breviarium* is the first treatise of medicine issued from the hospital. Mirfield, we are told, was familiar with the *Lily of Medicine* by Bernard of Gordon, the *Rosa Anglica* by John of Gaddesden, and the *Compendium* of Gilbert the Englishman, and also with the sadly inefficient translations into Latin of Galen and Avicenna. He had, therefore, made a comprehensive study of mediaeval medical textbooks, and may be regarded as the first physician to St. Bartholomew's Hospital.

For the first four hundred years of the hospital it would appear that its character as a religious house, with an annexe for the exhibition of charity to the poor, was strictly preserved, and it was only after the great upheaval caused by the "Injunctions" in 1535 that the hospital assumed prominence as a place for the treatment of sick people. The chapters on the "End of the Old Order" and the "New Order" give a luminous account of those great changes, and we commend them to students of medical history.

We have said enough to draw attention to the value of this fine book as a contribution to learning worthy of the great reputation of its author. We hope on a

[1] *The History of St. Bartholomew's Hospital.* By Norman Moore, M.D. Two vols. London: C. Arthur Pearson, Ltd. 1918. (Demy 4to. Vol. i, pp. xxii + 614; Vol. ii, pp. xiii + 992. £3 3s. net.) The book is a present from the author to St. Bartholomew's Hospital, and the proceeds from its sale will be given to the hospital.

future occasion to deal at length with the second volume of the work, where the hospital as a mighty influence on the course of medicine in this country is described.

THE ORGANIZATION OF RESEARCH.

IN a paper on the State organization of research, read at a recent meeting of the Royal Society of Arts, Sir Frank Heath, K.C.B., Secretary of the Department of Scientific and Industrial Research, succeeded in compressing into a few pages a lucid account of the work of his department. His characterization of research in general is, so far as it goes, excellent, and ought to be taken to heart by the public, but the treatment of a vast and complex subject which approves itself to one thoughtful man cannot be expected to satisfy all his readers. If, then, we dwell upon points of disagreement, we are not the less conscious that Sir Frank's paper compares favourably with the lucubrations of most administrators.

In the earlier part of his paper he emphasized the novelty of the departure made by the Government in 1915, and, without making the assertion in so many words, rather implied that our Government has handled the problem of national research with more courage and on more satisfactory lines than did that of the Germans. While we agree that the course followed here since 1915 was the best in the circumstances, we are emphatically of opinion that this is only true in consequence of past errors; that the idea inspiring the memorandum of v. Humboldt, quoted by Sir Frank Heath, is correct, and that the system of the German Government was in principle thoroughly sound.

The German ruling caste appreciated the importance of scientific knowledge a century before ours, and conceived that the best way to foster research was to create a number of adequately equipped university departments; they believed that the multiplication of opportunities for disinterested investigation would lead to the production of trained minds capable, in Sir Frank Heath's words, "of extending the powers and capacities of man in relation to the world in which he lives." They had their reward; all that scientific ingenuity and foresight could do to safeguard the Teutonic hegemony was done; there was no need of hasty improvisations. The German state system has perished in scenes of death and disaster, but of the many crimes and blunders committed by its makers, the neglect of science is not one. In this country, generations of neglect have compelled us to adopt in our hour of need an expedient which would not have found a single defender if proposed as a normal method of evolution. The courage of the Government in 1915, which Sir Frank Heath extols, was the courage of despair; we could not then, we cannot now, escape the penalty of a hundred years' sloth. It is too late to build from the ground on the German model, but we need not pretend that we have discovered for ourselves a better model, but should, with humble and contrite hearts, try gradually to improve our temporary structure into something like a real university system, keeping it free from such defects and abuses as in Germany that system revealed in practice; of these the worst was the prostitution of scientific appointments and scholarly reputations to the uses of political propaganda.

The actual organization of research in this country is far from satisfactory. In particular we think that the position of the Advisory Council should be reconsidered. It is obvious that a body of "seven independent and distinguished men of science, the majority of whom are large industrialists," can only be a makeshift instrument for the exercise of what is in effect considerable patronage in scientific education, for Sir Frank Heath anticipates that in the next academic year £30,000 will be expended on grants for the education of research workers. Nor do we consider that such a body ought to have, even in theory, a superior position to that of other scientific committees. Quite apart from the fact that no seven men could be capable of overlooking the whole field of research, the selection of "distinguished industrialists" means the choice of busy men, and the real patronage will sooner or later come to be exercised by the permanent civil servants. This is the fate of such schemes. The worker in pure science is not, as a rule, chosen to fill an exalted advisory position until he is past his intellectual prime, few can be known outside specialist circles until their real work is done, while the scientific industrialist, who *may* be known to the administrator in relatively early life, will not have leisure to give close attention to committees. As we remarked in a previous article, a better system would be to reduce the Advisory Council from its position of solitary grandeur and to range alongside of it with equal powers and responsibilities a council representative of medical research, another speaking for agricultural research, a third concerned with physics, and so forth. It is inadmissible that the proposals of, say, the council dealing with medical research should be referred to any other scientific council, having an ostensibly higher status, before the Minister gives his decision; such a plan must in the long run increase the power of the lay civil servant.

While we have no doubt that some such organization as that we suggest will be necessary for many years to come, its existence should be regarded, not as a testimonial to the enlightenment of our governing classes, but as a standing witness of their incompetence in the past. We ought to hope that the time will come when, like the burden of Christian, it will be loosed from our shoulders. This will happen when British universities are as numerous as and better staffed and equipped than those of Germany; a day this generation is probably not destined to see, but for which it can at least strive.

At present there is a too general tendency to give to State organization of research the credit of nearly all scientific work of national importance since the war. Actually the staffs of institutions unprovided with official Boswells or public funds have done at least as good work as those directly paid by the State and shepherded by civil servants. No official muse has celebrated the numerous researches inspired by the Director of the Lister Institute, Dr. C. J. Martin. His own contributions to the study of bacteriological problems, the series of researches into the causation and prevention of deficiency diseases executed by Miss Chick and her collaborators, the work of Bacot on the louse problem, of Arkwright on trench fever, of Miss Robertson on anaërobes, of Greenwood on nutritional and medico-industrial questions, will sustain a comparison with any products of State organized research. Had these investigations, instead of being inspired by the director of a private institute, been financed by the taxpayer they would have been more widely known.

It is not a healthy feature of our present mental attitude that scientific work done quietly and not as part of a "campaign"—"team work," or whatever may be the current metaphor—is likely to be ignored. This is one of the dangers of a system of State officials anxious to justify the expenditure of public funds, and should not be encouraged by those under no such temptation.

THE BRITISH MEDICAL ASSOCIATION MEETING IN APRIL.

THE success of the clinical and scientific meeting of the British Medical Association in the second week of April is assured so far as excellence and variety of the work can assure it; the only thing which can stand in the way of its complete success is the difficulty those who propose to attend from outside London may find in securing accommodation. Hotels are very full, and the pressure upon them does not seem likely to diminish. It is important, therefore, to secure rooms as soon as possible, and it may be necessary to pay a deposit at the time of ordering. There is no doubt that private hospitality will be offered, but its amount cannot yet be gauged. The special feature of the meeting will be the large number of demonstrations arranged for each of the afternoons; they cover a very wide field in medicine, surgery, and preventive medicine, and will, it is believed, form a strong attraction to all the members of the profession who wish to see the newest methods in actual working. There is little to add to the full programme published in the SUPPLEMENT for last week. As Colonel de Crespigny is about to return to Adelaide, he is compelled to resign the office of secretary of the Section of Medicine, and has been succeeded by Colonel R. J. Millard, C.M.G., D.D.M.S., Australian A.M.C. Major A. M. W. Ellis, C.A.M.C., is now associated with Dr. Arkwright as secretary of the Section of Preventive Medicine and Pathology; letters for Colonel Millard or Major Ellis may be addressed to Room 46A, British Medical Association, 429, Strand, W.C.2. On the second day of the meeting the Section of Medicine will hold a joint discussion with the Section of Preventive Medicine and Pathology on influenza. Owing to the immediate interest of the subject, it is proposed to devote the whole of the morning of April 10th to it. The introductory papers will be by Major-General Sir Wilmot Herringham, C.B., A.M.S., on the clinical aspects; by Captain M. Greenwood, R.A.M.C., on the epidemiology; and by Major Bowman, C.A.M.C., on the etiology. On Wednesday, April 9th, in the Section of Preventive Medicine and Pathology, an interesting discussion on the dysenteries, bacillary and amoebic, is expected; the subject will be introduced by Colonel L. Dudgeon, C.M.G., of St. Thomas's Hospital, and Professor Yorke, of the Liverpool School of Tropical Medicine.

THE DESTINATION OF RED CROSS EQUIPMENT.

THE *Daily Telegraph* published on Tuesday a timely article by a medical correspondent on the need for an increase in hospital accommodation and the way in which it should be provided. Most large hospitals are overtaxed; they have long waiting lists and sometimes they have to send out patients sooner than is altogether desirable; it is urged that some of the patients admitted to the institutions could properly be treated in cottage hospitals, or might be sent out sooner could continued institutional treatment be afforded them. The writer maintains also that fresh hospital accommodation is required for certain classes of patients who have not in the past usually been admitted, especially those suffering from disease in an early stage, or from common ailments which cannot be satisfactorily treated in their homes. Special reference in this connexion is made to dental disease, the cause, direct or indirect, of so much illness, and it is added that beds are required also for maternity cases which cannot be properly treated in the ordinary working-class house. "The record of the treatment of these cases in such few institutions as exist shows the importance of providing in every area sufficient hospital accommodation as near as possible to the homes of the patients." The writer concludes that the allowance of hospital beds should be increased from its present proportion of one to each thousand to three to each thousand of population; in this proportion would be counted a certain number of beds in private wards for patients willing to pay the necessary fees. The local hospitals would provide suitable rooms for such public services as the treatment of school children, child welfare, and dentistry, and it is suggested that the district nurse and the district midwife should reside in the hospital, where they could do much of the work they now do in the homes of the patients. The practical proposal is made that the present opportunity—when the temporary hospitals of the Joint Committee of the British Red Cross and the Order of St. John are being closed—should be taken to utilize so much of the existing equipment as would be suitable for the establishment of a cottage hospital where needed. In many instances those responsible for these hospitals have money in hand as well as the temporary buildings. Though these are usually wooden structures, they would, it is thought, if erected on a good foundation and well cared for, last a good many years; there is ample evidence to support this opinion. The further suggestion is made that it would be very advantageous to retain the services of one or more of the motor ambulances used in the neighbourhood in connexion with these hospitals, and also to enlist the interest of some of the personnel of the voluntary aid detachments. This point, we understand, is already engaging the attention of the Joint Committee. The writer considers that, though the establishment charge would have to be paid for out of charitable funds, all other expenses of such hospitals might be met by direct payments for the patients treated. The local authorities might be expected to pay for the persons for whom they are responsible, and works, clubs and other similar bodies, instead of paying an undefined subscription to the hospital, might be asked to form a hospital fund out of which to defray the cost of each patient they sent. It is believed that the hospitals might expect before long to receive contributions also from approved societies and Insurance Committees. For insured persons or any other contract patients the doctors would receive an agreed payment, but for all others would make their own arrangements with each patient.

VOLUNTARY HOSPITALS AND THE MINISTRY OF HEALTH.

THE second clause of the Ministry of Health Bill introduced last November is reproduced textually in the bill introduced on February 17th. It states that it would be "the duty of the Minister to take all such steps as may be desirable to secure the effective carrying out and co-ordination of measures conducive to the health of the people, including measures for the prevention and cure of diseases, the treatment of physical and mental defects, the collection and preparation of information and statistics relating thereto, and the training of persons engaged in health services." The terms of the clause have given rise to a certain amount of apprehension among persons, lay and medical, interested in voluntary hospitals; but we take the clause to be declaratory or declamatory, and intended merely to give the Minister power to collect information with regard to physical and mental defects, and to use his influence to encourage voluntary hospitals to discharge their duties to the sick and injured even still more effectually than in the past. An instance has been brought to our notice in which in a large provincial town a proposal to extend the local general hospital by building a memorial wing was held up owing to this declaratory clause. The promoters of the project very wisely wrote to Dr. Christopher Addison, who in his reply said: "I am quite sure that you may be satisfied that there will be nothing in our proposals which will make it undesirable or disadvantageous that the beneficent scheme which you have in contemplation shou'd be postponed." Since then Dr. Addison has become President of the Local Government Board, and will, no doubt, be the first Minister of Health. We have no authority to speak for him, but, remembering that in the earlier non-political part of his

career he was a teacher in medical schools, we think there can be no doubt that he is imbued with the opinion that the perfecting of medical education is one of the first duties of the State, and that he will act in unison with the enlightened policy outlined in the memorandum of the Board of Education. As we have set out in a recent issue, the Board of Education recognizes that what we have for convenience ventured to call paulo-post-graduate education is an essential part of medical education, without which it cannot be considered complete. We conceive that any improvement of a local general hospital contemplated by the citizens of the town to which it belongs will have the sympathy and cordial support both of the Minister of Health and the President of the Board of Education, since opportunities for holding resident appointments in such hospitals are matters of urgent necessity for rounding out our system of medical education.

THE EVIL OF UNREGISTERED DENTISTS.

THE report of the Committee appointed to "inquire into the extent and gravity of the evils of dental practice by persons not qualified under the Dentists Act" was issued on February 25th. It is a closely reasoned and comprehensive document, with which we can only deal briefly at present. The general conclusion is contained in the following statement: "We wish to state very strongly that, in our opinion, the State cannot afford to allow the health of the workers of the nation to be continuously undermined by dental neglect. Steps should be taken without delay to recognize dentistry as one of the chief, if not the chief, means for preventing ill health, and every possible means should be employed for enlightening the public as to the need for conservative treatment of diseased teeth. The dental profession should be regarded as one of the outposts of preventive medicine, and as such encouraged and assisted by the State. Treatment should be rendered available for all needing it. The present anomalous position in which an uneducated, untrained person can practise as a dentist, performing surgical operations on the teeth and jaws, doing untold damage and casting undeserved odium and dishonour on a scientific profession is intolerable, and should be dealt with immediately." The Committee, whose report is unanimous, states that there was a great shortage of registered dentists before the war, and that it has been intensified since. The registered dentist tends to go to the centres of populous towns and to smaller towns, so that in fact he attends mainly to the dental needs of the upper and middle classes, the artisan and working classes in the bulk receiving very little treatment from registered dentists, owing, in part, to their uneven distribution in different parts of the three kingdoms. The causes of the shortage of registered dentists are said to be the present unsatisfactory state of the law, allowing the practice of dentistry by unregistered persons who have not qualified for the profession by a prescribed course of instruction, training, and examination, and the length and great expense of the minimum course of instruction and training for dental students. The Committee advises an alteration of the law to prohibit the practice of dentistry by persons not registered, the registration under certain conditions of unregistered practitioners practising at the present time, the establishment of a system of scholarships, the issue of increased grants to dental schools, and a reduction in the minimum time required to be spent by dental students in obtaining a qualification in dental surgery. It advises also the registration after a short course of study and examination of dental mechanics employed as such during the five years last passed. It recommends the establishment of a system of dental treatment for school children, for expectant mothers, and for children under the age of five years, and the employment of dental dressers or assistants acting under the supervision of registered dentists in school and public dental services. To regulate the admission of unregistered practitioners in practice at the date of the report to registration as dentists it is advised that a special committee should be appointed. It points out that steps should be taken to safeguard the interest of any member of His Majesty's Forces who before joining was an unregistered dental practitioner or assistant practitioner or dental mechanic. The institution of a thorough research into the causes and effect on health of dental caries is advised. It is also recommended that a statutory Dental Board under the General Medical Council should be set up for the government of the dental profession, and that the practice of dentistry by public companies shall be subject to special control, provision being made to meet the case of existing companies.

PRESENT FOOD POLICY.

THE Food Controller made some interesting statements at a conference at the House of Commons last week. He said in the first place that the policy of the Food Ministry was to consider control or the abandonment of control of staple foods from the standpoint of price. If abandonment of control would result in a reduction of prices that policy would be carried out; if there were a danger of prices remaining at their present level or rising above it, control would be maintained. Although it was agreed that the Ministry of Food was not to be one of the permanent departments of State, experience had proved that certain forms of control ought to be made permanent and a bill was being drafted incorporating certain powers now exercisable under the Defence of the Realm Act. One matter in which the work of the Ministry ought to be continued, probably under some other department, was the control of the milk supply. This was necessary to secure increased milk supplies at guaranteed prices, to improve the quality of milk, to prevent the domination of the trade by trusts, to effect economies in the wholesale and retail distribution of milk, and to ensure its equitable distribution. It was subsequently announced in the House of Commons that the question was being considered in the first instance by an interdepartmental conference, comprising representatives of the Ministry of Food, the Local Government Board, and the Department of Agriculture. The other work which Mr. Roberts considered should be made permanent was that connected with national kitchens; they were particularly needed in industrial areas where cheap wholesome food was not at present by any means always obtainable. Mr. Roberts expressed sympathy with the public demand for the liberation of more potable spirits at a time when influenza was prevalent, and on February 25th he stated in the House of Commons that the Cabinet had decided that spirits should be released up to 75 per cent. instead of 50 per cent. of the quantities released in 1916, so that considerable additional quantities ought to be available. He added, in reply to a question whether steps would be taken to ensure that sick people would be able to get whiskey, that endeavours would be made to see that distribution was equitable. There were, he said, 113,788,000 proof gallons of home made spirits in bonded warehouses of the United Kingdom. Before the war the requirements for consumption in this country, exports, ships' stores, and manufacturing purposes, amounted to about 50 million proof gallons a year. It appeared, therefore, that exclusive of spirit manufactured since January 31st, 1919, the stocks of the country were equal to about 2¼ years' requirements for all purposes at the pre-war rate. Under the Immature Spirits Act not all the spirits in bond were available for immediate consumption. As the rate of duty had been doubled, and prices were much higher than before the war, it was not possible to say what the rate of consumption would be. In connexion with existing restrictions on articles of food the medical profession is now concerned with the purchase by patients of cream and of additional quantities of meat

and "butter-margarine." In active tuberculosis, diabetes and glycosuria, Graves's disease, pernicious (not ordinary) anaemia, inoperable cancer, convalescence after severe illness or operation, or serious loss of blood, including childbirth in which the child does not survive, and in infantile diarrhoea and wasting, the Food Control Committee may sanction increased rations of meat and butter-margarine, in accordance with the circular issued recently to medical practitioners by the Ministry of Food. In the diseases enumerated, permits to obtain cream may be granted as an alternative to butter-margarine in the proportion of 10 fluid oz. of cream to 5 oz. of butter-margarine. The permit is granted by the Food Control Committee on the strength of a certificate by a medical practitioner. With regard to cream recommended for persons suffering from any other disorder than those enumerated above, the amended Cream Order of December, 1918, restricted the sale or supply of cream for consumption by invalids to half a pint weekly. Applications for cream in these circumstances, accompanied by the certificate of the medical practitioner, are forwarded by the Food Control Committee to the Medical Section of the Ministry of Food, where they are scrutinized by the medical adviser; the Section may then, if it thinks fit, grant a permit. In view of the milk shortage, permits are at present granted only in exceptional cases, and while full consideration is given to recommendations contained in the medical certificate accompanying an application, these certificates are no longer authorities for the supply of cream, as was the case under the original Cream Order of 1917; they are regarded as recommendations submitted to the Ministry for consideration.

THE RECRUDESCENCE OF INFLUENZA.

THE greater severity of the renewed outbreak of influenza in the north of Great Britain, which we mentioned last week, is emphasized by the latest mortality returns. The only Scottish figures at present available refer to the week ending February 15th. The death-rate from all causes for the sixteen principal towns was equivalent to an annual rate of 32 per 1,000, the highest experienced since the present statistical grouping was adopted (in 1913), and 8.2 above that of the previous week. The nearest approach to this figure was 30.5 in the week ending November 2nd, 1918. The highest rate was in Edinburgh (51.6), the Glasgow rate being 31.6, and that of Dundee 23.8. The English data carry the record down to the week ending February 22nd, and show that the large increases have (excepting London) been confined to certain northern cities. Of these, the most striking are at Newcastle-on-Tyne, which returned 163 deaths last week (119 the previous week), at Liverpool with 188 deaths (148 in the previous week), at Manchester with 130 (44 the previous week), and at Bradford 141 (50 the previous week). Stoke-on-Trent, Bolton, Salford, Leeds, and Sheffield also show considerable increases. The deaths from influenza in London for the week ending February 22nd numbered 653, but the increase is not so large as would have occurred had the development followed a similar course to that of the autumn recrudescence, since, as we pointed out last week, on that hypothesis the figure would have been 924. It is too early to say that the figures for the south afford grounds for optimism, but the actual position is rather less grave than might have been feared, although the state of affairs in the north is disquieting.

HOW TO AVOID INFLUENZA.

ALTHOUGH man has lived in houses of one kind or another for several thousand years, and in western Europe since the introduction, somewhere in the fifteenth century, of glass for domestic windows, in houses which can be almost hermetically sealed, yet a human strain capable of withstanding the evil influences of unventilated rooms has not so far been evolved. Our ancestors of a few centuries ago immured themselves in tightly-closed houses, slept in bedrooms with windows closed, sometimes even in cupboards or box beds with shut doors. The result was reflected in their mortality, in the prevalence of the plague and other plagues, and in their short average span of life. Though we are wiser than they, and pay lip service to the virtues of fresh air, and talk much and learnedly on ventilation, the severity of the present pandemic of influenza is enough to show that we need to grow wiser. Dr. Leonard Hill, who has done perhaps more than any one else to give a scientific explanation of the air conditions of health, makes another contribution to our pages this week in which he relates some interesting experiments on himself and other volunteers. They lead him to urge as the best means of combating the infection of influenza, the deep breathing of cool air brought about by exercise, and by sleeping in the open air—this last perhaps a counsel of perfection. The advice applies not only to influenza itself, but to the colds and catarrhs which, in the aggregate, are responsible for so much discomfort and loss of efficiency. A striking illustration has been related to us by Colonel C. T. C. de Crespigny, D.S.O., A.A.M.C. During August, 1918, a transport left Australia bound for Great Britain. The 1,200 troops which she carried were accommodated in four troop decks of about equal capacity. Three decks were well ventilated with windsails, but the fourth deck was in this respect very unsatisfactory. Early in the voyage a form of infective pharyngitis and epidemic catarrh broke out among the troops. The incidence of the infection was ten times greater among the men occupying the badly ventilated decks than it was among the others. In all other respects the men were exposed to precisely similar conditions; they wore the same clothes, ate the same food, and all of them slept in hammocks slung very close together. Thus the experience has the value of a carefully planned experiment in showing the effect of freely moving air as a preventive of infections of this nature. Another striking instance, recorded by Colonel Adami, F.R.S., in the first volume of his book on the *War Story of the Canadian Army Medical Corps*, was noted in the review published in the first number for this year. The winter of 1914–15 was very wet, and the troops under canvas on Salisbury Plain suffered extreme discomfort, but nevertheless continued in excellent health. When, after some six weeks, the discomfort of tent life and the increasing cold of winter induced the authorities to replace the tents by huts, then influenza and throat troubles began to spread at once and rapidly, and, what was worse still, a series of cases of cerebro spinal fever occurred.

THE STRENGTH OF THE R.A.M.C., 1914–1918.

GENERAL SIR WILLIAM ROBERTSON, in his speech at the Hunterian Festival, gave some figures with regard to the growth of the army medical service during the war. They were in round numbers, and on one point he was not clearly heard. We are therefore glad to be in a position to give the precise figures in August, 1914, and in October, 1918:

	August, 1914.		October, 1918.	
	Officers.	Other Ranks.	Officers.	Other Ranks.
Regular ...	1,279	3,811	10,289	102,312
T.F. and T....	1,889	12,520	2,863	30,605
Totals ...	3,168	16 331	13,152	132,917

The officers enumerated in 1918 included 820 dental surgeons. The total number of officers and other ranks among all the military forces and for all the theatres of operations who were wounded and survived was stated by Mr. Bonar Law, on February 24th, to be approximately 2,047,211. The total number of killed was 673,943, but

this includes those who died from wounds or other causes. These figures do not include the Royal Navy nor the Royal Air Force from April 1st, 1918.

WE publish in the SUPPLEMENT this week an account of the steps taken by the Central Medical War Committee to protect or promote the interests of members of the medical profession who have been on service.

Medical Notes in Parliament.

The Ministry of Health Bill.

THE Ministry of Health Bill had second reading in the House of Commons on February 26th after a debate which extended through the sitting, but was of a friendly character, nearly all who took part, indeed, welcoming the proposal and promising sympathetic support, though a few were critical of details. Earlier in the afternoon the Secretary for Scotland had announced that at the unanimous wish of the Scottish members a separate bill would be introduced for Scotland, and the present bill, framed to apply to England, Wales, and Scotland, would be remodelled accordingly. Dr. Addison, in the course of the speech in which he moved the second reading, intimated that he was willing that the provisions of the bill should be applied as far as practicable to Ireland. After the second reading an instruction was carried, on the motion of Captain Craig, that Grand Committee should have power to extend the bill to Ireland.

Dr. Addison covered familiar ground in explaining the scheme of the measure. The work of the Central Medical Research Committee was, he said, to be subject to the Privy Council, because the new Ministry would have authority only over part of the United Kingdom—that is, England and Wales—and medical research should be as wide as possible in its survey. Major Astor (the Parliamentary Secretary to the Local Government Board), in an eloquent summing up at the end of the discussion, added that the work of the Research Committee would embrace the Empire and greatly gain thereby.

In reply to Sir Philip Magnus, Dr. Addison stated that the Local Government Board, as well as the National Insurance Commissioners, would cease to be on the passing of the Act. On another point he said that housing must come under the control of the Ministry of Health, as the aim of the Department would be to serve, not only remedially, but preventively.

Sir Watson Cheyne, after congratulating the Government on bringing in the bill, said that the Ministry should have an executive branch to carry out the plans which emanated from the thinking body. The Minister should have an advisory body meeting at definite times, not only to consider the proposals set before it by the Minister, but also to initiate proposals, and should have direct access to the Minister. He could not contemplate a Ministry of Health without a research department. Dr. B. Macdonald (Wallasey) regretted that the Research Committee was to be handed over to the Privy Council. Major Farquharson, speaking as one who had spent the greater part of his professional life among miners, thought that it would be well within the scope of the Research Committee to determine scientifically the amount of labour a worker could afford to give without endangering his physical health. Captain Elliott thought the cutting out of the functions of the Medical Research Committee was unsound, and protested that £60,000 a year was far too small a sum for research. Colonel Raw hoped that the Ministry would have complete charge of the milk supply, and thought a Ministry of Health without a Research Committee would be incomplete. He considered the treatment of mental disease ought to be a primary duty of the Ministry.

The Demobilization of Medical Men.

Replying to Sir Kingsley Wood, Major Astor said, on February 24th, that the number of practitioners working for the Insurance Committees in England on October 1st, 1918, was 8,084, besides a certain number holding commissions in the R.A.M.C., who were free to do some part-time work for these Committees. Since November 11th the number of insurance practitioners on panels in England who had been notified by the War Office as definitely released was 647. The responsibility for arranging with the Navy, Army, and Air Force authorities for the demobilization of doctors rested with the Ministry of National Service. The Insurance Commissioners made periodical representation to that department for expediting the rate of release for civil needs and for securing the release of particular doctors required for specially urgent necessities in individual areas. The Commissioners were in constant communication with the various Insurance Committees as to the needs of areas.

Assistant Medical Officers in Public Asylums.—Sir Watson Cheyne asked the Home Secretary whether he was aware that assistant medical officers of public asylums were not allowed to marry, and, if so, whether that rule would be rescinded. Mr. Shortt stated in reply that the rules governing service by medical officers of asylums were made by the visiting committees. He was informed that there was no general rule preventing the marriage of assistant medical officers, but the possibility was largely dependent on the nature of the residence provided; in a large number of cases the accommodation was suitable only for an unmarried officer. The Board of Control had used its influence in the direction of securing such accommodation as would enable the senior assistant medical officer, and in large asylums the second assistant medical officer, to marry. Separate houses had been provided with this object in the grounds of some ten county asylums, including four of those belonging to the London County Council.

Insurance Benefits for Discharged Soldiers and Reservists.—In reply to Mr. Devlin, Sir James Craig, on February 19th, said that in Great Britain all men, whether insured or not, who were invalided from the forces or certified on demobilization to be in failing health by reason of their service, were entitled to free medical benefit under the National Insurance Acts—that is, to the services of a general medical practitioner and the supply of medicines, except in the case of uninsured men whose total income exceeded £160 a year. By special arrangements with the Irish Insurance Commissioners which came into force in October, 1918, similar provision was extended to Ireland so far as invalided men were concerned, and the question of extending the arrangements to men in impaired health on demobilization was under consideration. On the same day Mr. Pratt stated that a soldier, discharged to the Reserve for civil work, was entitled to sickness benefits under the Insurance Acts so long as he remained in the Reserve and continued to be an insured person. If, however, he was recalled to the army, sickness benefit ceased to be payable.

Specialist Attendance for Insured Persons.—Mr. Pratt stated, on February 24th, that the supplementary estimates before Parliament in the summer of 1914 provided for the services of medical specialists when the panel practitioner considered it necessary. The matter had been suspended during the war, but was now having attention.

Rabies in Cornwall.—Sir A. Griffith-Boscawen, in reply to Mr. Carew on February 19th, stated that the last case of rabies in Devon and Cornwall was confirmed on February 11th; there were still a number under investigation. The total number of cases to date was 118, of which 94 had occurred in Devon and 24 in Cornwall; 18 civilians, 2 soldiers, and one sailor had been bitten, and had undergone the Pasteur treatment for hydrophobia. Mr. Lambert asked whether generally rabies in these counties was decreasing. Sir A. Griffith-Boscawen replied that it had been better recently, but was by no means stamped out.

THE WAR.

ZEEBRUGGE AND OSTEND.

WHEN the U boat menace was growing more serious, the sinking of passenger and hospital ships more frequent, and the German boasting louder and more confident, some of us asked in our hearts why the navy did not seek out the wolf in his lair, but were silent partly because we assumed the navy knew its own business best, and partly because we had been shamed by Mr. Churchill's bombast about digging the German navy out of Wilhelmshaven. We now know that the British navy had been thinking about the matter very seriously even so early as October, 1914, when the German armies first occupied the Belgian coast. Lord Jellicoe and Admiral Sir Lewis Bayly had then advised the Admiralty that it was possible to block Zeebrugge by sinking ships across the channel. "It was not considered practicable by the Admiralty." That the Admiralty was wrong is proved beyond peradventure by the fact that in April, 1918, after the enemy had had three years and a half to enlarge his defences and strengthen his batteries, the thing was done, and done at the cost of relatively few casualties, and of the loss of one destroyer and two motor launches. We get no hint of who turned the suggestion down in 1914, but in war, as in medicine, the "Minister responsible to Parliament for expenditure" sometimes takes it upon himself to make decisions which involve the

country in great loss of money as well as life. It would appear that the then First Lord of the Admiralty (Mr. Churchill) was anxious for an attack on Heligoland. The idea was unanimously condemned by every flag officer, but was not finally abandoned for some time.

THE PREPARATIONS.

When Lord Jellicoe went to the Admiralty as First Sea Lord in 1916 the idea of blocking Zeebrugge was again mooted, but as the army then hoped to drive the enemy from the Belgian coast nothing was done. By September, 1917, it had become clear that the driving could not be done that year. Sir Roger Keyes was instructed to get out plans for blocking the canal at Zeebrugge and at the same time attacking the Mole as a diversion and in order to destroy enemy destroyers. The scheme was sanctioned in November, 1917, and the dispatch of Sir Roger Keyes, Vice-Admiral Dover Patrol, published in the *Gazette* of February 19th, tells how the enterprise was carried through.

Volunteers were called for, and from the very large number who responded were picked as many officers and men as were wanted. They were drawn from the Grand Fleet, the three Home Dépôts, the Royal Marine Artillery and Light Infantry, the Dover Patrol, the Harwich Force, the Royal Australian Navy, the Admiralty Experimental Stations, and the French Navy. The blocking ships and the storming forces were assembled towards the end of February, and after April 4th received special training in the plan of operations. After two postponements, owing to unfavourable weather, the main force started from its point of concentration at 4.53 p.m. on April 22nd. The distance was sixty-three miles and the time allowed seven hours.

THE BLOCKING OF ZEEBRUGGE.

Vindictive, coming out of a smoke screen four minutes before midnight, saw the Mole 300 yards off, and at one minute after midnight on April 23rd was alongside it. Then followed three or four minutes, "a very trying period," until the Liverpool ferry boat *Daffodil* arrived to push the ship against the Mole. Until this was done it was impossible to land on the Mole, and many casualties occurred during the wait. The viaduct from the Mole to the shore was blown up by submarine C3, whose crew were got away with few casualties. The landing parties from *Vindictive* attempted to storm the defences of the Mole, but, partly because the ship had overshot its allotted station, with only partial success.

The main object of the whole operation was to block the Bruges ship canal at its entrance into Zeebrugge harbour, and when this had been done by *Intrepid* and *Iphigenia*, the signal to retire from the Mole was given at 12.50, and at 1.10 *Vindictive*, her bow being pulled away from the Mole by *Daffodil*, turned under her own helm, and reached Dover under her own steam at 8 a.m. *Thetis*, the first block ship to enter, was badly holed and grounded in the harbour, but her crew, together with those of *Iphigenia* and *Intrepid*, were taken off by motor launches handled with splendid daring and initiative. One of them brought out 101 people from the two block vessels first named; some were killed in the launch and others wounded before they could be transferred to *Warwick*, Vice-Admiral Keyes's flag-ship. The crews of the block ships suffered unexpectedly few casualties. Most of the casualties suffered by the expedition occurred on the Mole or on *Vindictive*. Of her we read: "Half an hour after the storming of the Mole had been commenced, the captain visited the decks below and found Staff Surgeon James McCutcheon and the staff under him working with great energy and care. A constant stream of casualties were being brought down every hatch, yet there appeared to be no delay in dealing with each case."

The attempt to block Ostend failed on this occasion, both block ships going aground about a mile and a half to the east of the canal. Their crews were taken off by motor launches under heavy fire.

Casualties.

The casualties to officers and men on April 23rd were: Killed 176, wounded 412, missing 49 (of whom 35 are believed to have been killed). The final paragraph of the dispatch is as follows:

XIV.—MEDICAL ARRANGEMENTS.

"In conclusion, I desire to make a special reference to the praiseworthy manner in which the medical officers and their staff and volunteer helpers devoted their skill and sympathy to those who were wounded in these operations. Fighting at such close quarters the casualties were bound to be numerous, and the wounds likely to be severe. Staff Surgeon James McCutcheon, M.B., was the senior medical officer of the force. In an able report that officer outlines the work of his staff and the circumstances in which it was done, and I trust that the Lords Commissioners will agree with me in thinking that no branch of the naval service surpassed in zeal and ability the efforts of the medical branch to prove itself worthy of its profession and of the occasion. I have selected with difficulty from a number of very deserving officers the names of three to be representative recipients of such promotion as their lordships may be able to award for these operations to the medical branch of the Royal Navy."

THE SECOND ATTEMPT TO BLOCK OSTEND.

The second expedition to Ostend was so far successful that *Vindictive* was sunk inside the harbour, partially blocking it. Her crew, including wounded, were very gallantly taken off by motor launches to the *Warwick*. She struck a mine, and, though she got back to Dover, it was considered wise to transfer the wounded to *Velox*. The casualties were 8 killed, 30 wounded, and 11 missing (believed killed).

"A FEAT OF ARMS."

Mr. Kipling, in ironic allusive mood, once wrote: "It is the disgrace of our navy that we cannot produce a commissioned officer capable of writing one page of lyric prose." Who reads the following passage in the Zeebrugge dispatch will judge the navy capable of elegiac prose: "I cannot close this brief summary without reference to those gallant souls who did not live to see the success of their endeavours. It seems almost invidious to mention names when every officer and man who took part was animated by one spirit, ardently welcoming the opportunity of achieving a feat of arms against odds in order that honour and merit might be added to that which our Service has gained in the past."

A MESOPOTAMIAN DISPATCH.

THE weather—the cold rain in spring and the oppressive heat in summer—is the recurring note of the dispatch in which Lieutenant-General Sir W. R. Marshall, K.C.B., describes the operations of the Mesopotamian Expeditionary Force from April 1st to September 30th, 1918 (*London Gazette*, February 20th, 1919).

It opens with a dryly humorous story of how the holy Ulema and the notables of Nedjef arrived at the conclusion that the leaders of "The Committee of Rebellion," organized with German money, ought to be handed over to British justice. It relates the fighting to drive the Turk from his main position, some of it, in May, done in torrential rain that caused heavy floods. It describes the occupation of Baku, and how on its hurried evacuation the force was able to embark all its sick and wounded.

During the inactivity of the summer everything possible was done to give the men opportunities for physical training and recreation. The results were excellent, and must have greatly assisted the medical service in caring for the health of the force. Of the medical service General Marshall writes:

The period April 1st to July 13th shows a distinct improvement in the health of the troops as compared with the corresponding weeks of last year:

	Last Year.	This Year.
Average weekly admissions on account of sickness. Ratio per cent. of ration strength	1.73	1.45
Average weekly wastage (death and invaliding) on account of sickness. Ratio per cent. of ration strength	0.31	0.16

These figures indicate a very considerable saving to the force, which has been achieved by unremitting care paid by the medical authorities to sanitary and medical requirements, and to the constant devotion to duty shown by the nursing services.

Special thanks are given to the Indian Comforts Fund and other organizations in India, to the Mesopotamian Comforts Fund, the Indian Soldiers' Fund, and the Shanghai Comforts Fund.

The agricultural development of the country is going on, and some 70 per cent. of the cereals available for the force are derived from the Hilla district, being transported on a broad-gauge railway. The harvest in 1918 was late but

bountiful, and it is expected that in future the force will be self-supporting as regards barley and fodder.

A special supplement to the *London Gazette*, dated February 21st, contains a list of names mentioned by Lieut.-General W. R. Marshall for "distinguished and gallant services and devotion to duty." The list includes 54 officers of the A.M.S. and R.A.M.C. (Regular, Special Reserve, and Territorial), 25 Officers of the I.M.S., and 9 of the Indian Medical Departments. In addition, it contains 70 warrant and non-commissioned officers and privates of the R.A.M.C. (Regular and Territorial), and 17 of the Indian Medical Department.

CASUALTIES IN THE MEDICAL SERVICES.

ROYAL NAVY.

Died on Service.

Surgeon Lieutenant R. A. Hobbs, R.N.

Surgeon Lieutenant Roland Augustus Hobbs, R.N., died of pneumonia, on February 13th, at the Royal Naval Hospital, Haslar, aged 33. He was the second son of Mr. F. A. Hobbs of High Wycombe, Bucks, and was educated at St. Mary's Hospital, taking the diplomas of M.R.C.S. and L.R.C.P.Lond. in 1908. After filling the post of house-surgeon and anaesthetist at the Royal Surrey County Hospital, Guildford, he went into practice at High Wycombe, where he was honorary medical officer to the High Wycombe and Earl of Beaconsfield Memorial Cottage Hospital. He joined the navy as a temporary surgeon in 1914. He was recently in charge of the Royal Naval Hospital at Hull.

ARMY.

Died on Service.

Major H. G. Gibson, R.A.M.C.

Major Howard Graeme Gibson, R.A.M.C., died at No. 2 Stationary Hospital, Abbeville, on February 12th, aged 35. He was born on May 20th, 1883, educated at Felsted School and at Guy's Hospital, where he was in the Rugby XV, and took the diplomas of M.R.C.S. and L.R.C.P.Lond. in 1907. Entering the R.A.M.C. as lieutenant on January 28th, 1907, he became captain on July 28th, 1910, and brevet major on January 1st, 1918. He went out to France with the original Expeditionary Force in August, 1914, served with the 12th Lancers in the retreat from Mons, and was severely wounded at the first battle of Ypres. He was then stationed at the Army Medical College for two years, and returned to France in November, 1917.

Captain R. C. Davie, R.A.M.C.

Captain Robert C. Davie, R.A.M.C., died of pneumonia after influenza on February 4th, at Largs, while on leave from France, aged 32. He was educated at Glasgow High School and University, where he graduated M.A. with first class honours in 1907, and B.Sc. in 1909, and received the honorary degree of D.Sc. in 1915. At Glasgow University he gained the Dobbie-Smith gold medal and the Donaldson scholarship in botany, and was appointed assistant in the botanical department. In April, 1913, he was appointed lecturer in botany at Edinburgh University, and in 1914 made an expedition to Brazil to carry out botanical research. He took a commission as lieutenant in the R.A.M.C.(T.F.) in the 1st London Sanitary Company on May 29th, 1917, and was promoted to captain after a year's service. He had been in charge of the sterilizing section of a water-tank company at the fron[illegible]

Captain J. J. Dwyer, D.S.O., R.A.M.C.

Captain James Jameson Dwyer, D.S.O., R.A.M.C., died of pleurisy at No. 30 General Hospital, Calais, on February 19th. He was educated at the Catholic University, Dublin, and took the diplomas of L.R.C.S.I. and L.R.C.P.I. in 1909, after which he filled the posts of clinical assistant at the Chelsea Hospital for Women, and of house-surgeon at the West Kent General Hospital, Maidstone. He took a temporary commission as lieutenant in the R.A.M.C. on December 1st, 1914, and was promoted to captain after a year's service. He received the D.S.O. on June 4th, 1917.

Lieutenant W. M. Crombie, I.M.S.

Lieutenant William Maurice Crombie, Indian Medical Service, died at the Albert Docks Hospital, London, from influenza following illness contracted at Bagdad, on February 17th. He was the eldest and only surviving son of the late Dr. J. Crombie of Sidcup, Kent, was educated at St. Thomas's Hospital, and graduated M.B. and B.S.Lond. in 1916, also taking the diplomas of M.R.C.S. and L.R.C.P. Lond. in that year. After acting as senior obstetric house-physician at St. Thomas's, he took a temporary commission as lieutenant in the R.A.M.C. on May 22nd, 1916. On January 23rd, 1917, he was appointed to be a permanent lieutenant in the I.M.S., his commission subsequently being antedated to May 22nd, 1916, and after a year's service to a temporary captaincy.

Deaths among Sons of Medical Men.

Bamber, Claude Charles, Captain 2nd Battalion Warwickshire Regiment and Machine Gun Corps, eldest son of Colonel C. J. Bamber, I.M.S.(ret.), died at Kohat on January 26th. He attained the rank of captain on December 26th, 1914, and at the time of his death was serving with the 3/9th Gurkhas.

Burton-Fanning, Newell E. E., Captain Royal Marine Light Infantry, eldest son of Dr. Burton-Fanning, of Norwich, reported missing on April 24th, 1917, now presumed killed on that date. He was educated at King Edward's School, Norwich, and at Repton, and had entered at Christ's College, Cambridge, before the war, but instead of joining took a commission in the R.M.L.I. He served in Gallipoli, taking part in the landing on Y Beach in April, 1915, at Salonica, and since 1916 in France. He was promoted to captain in May, 1916, and was killed at Gavrelles, near Vimy.

Garrod, Basil Rahere, Lieutenant Loyal North Lancashire Regiment, youngest and last surviving son of Colonel Sir Archibald Garrod, K,C.M.G., A.M.S., physician to St. Bartholomew's Hospital, died of pneumonia on February 4th at No. 36 Casualty Clearing Station, aged 21. He was educated at Marlborough, got his commission from Sandhurst in December, 1915, and was promoted to lieutenant on June 30th, 1917. He went to France in January, 1917, was invalided for trench fever in July, 1917, was attached to the Royal Flying Corps in November, 1917, and returned to France in May, 1918. His two elder brothers, Lieutenant A. Noel Garrod, R.A.M.C., and Second Lieutenant Thomas M. Garrod, were both killed in France.

Grant, James Gibson, late Second Lieutenant 2/10th King's Liverpool Regiment (Liverpool Scottish), son of the late Dr. Grant Bey of Cairo and Aberdeen, died at Banchory, of illness contracted on active service, on February 19th, aged 27.

Holden, James, youngest son of the late Dr. Holden of Whitby died at the Royal Naval Hospital, Larbert, of pneumonia recently, aged 25.

Hooley, Arthur Wellesley, Lieutenant Army Service Corps, only son of Dr. A. Hooley of Cobham, Surrey, accidentally killed in France, dying at No. 50 Casualty Clearing Station on February 9th. His commission was dated September 11th, 1916. Since January 10th, 1918, he had been attached to the Queen's Royal West Surrey Regiment.

Hooper, P. J., Private Canadian Forces, second son of Dr. Hooper of Burton-on-Trent, died in hospital at Bramshott recently, after prolonged service in France. His elder brother, a surgeon in the navy, was lost in H.M.S. *Natal* about three years ago.

McGeagh, William Morice, Lieutenant 3rd (Reserve) Battalion South Lancashire Regiment (Prince of Wales's Volunteers), younger son of Dr. R. T. M. McGeagh, died of pneumonia after influenza at Mona Lodge, Ramsey, Isle of Man, aged 22, on February 10th.

Ogston, Alexander Lockhart, Captain Royal Marine Artillery, fourth son of Sir Alexander Ogston of Aberdeen, past president of the British Medical Association, died of pneumonia on February 8th.

Spencer, Hermann E., eldest son of Dr. Frederic Spencer of Highgate, died at Maghull Military Hospital on February 13th. He was at Jesus College, Oxford, before he joined the army.

Sturge, Captain Edmund, 10th Middlesex T.F., died, aged 23, on February 8th, at No. 79 General Hospital, Taranto, Italy, on his way home, after serving continuously through the campaigns in Mesopotamia and Palestine. He was the younger son of Dr. H. H. Sturge of Elgin Avenue, W., formerly Representative for the Kensington Division. On the declaration of war against Germany on August 4th, 1914, 2nd Lieutenant E. Sturge, together with all his brother officers and 80 per cent. of the men volunteered for active service anywhere. The regiment left for India that October. In India Lieutenant Sturge passed out fourth in a class for signalling, and learnt to speak Hindustani. When General Townshend's army was captured, he volunteered to go to Mesopotamia. He served throughout the campaign under General Maude, was promoted to captain when 20, and his name was included among those given by Sir Stanley Maude as deserving of special mention. Later he was attached to the 3rd Indian Divisional Signal Company, was transferred to the Holy Land, and took part in the strenuous conquest of Palestine under General Allenby. After four and a half years' service he received leave in January, but on the way home was admitted to hospital at Taranto, where bronchopneumonia developed after influenza and proved fatal. He was educated at Merchant Taylors' School as a boy. Captain Sturge was a keen member of the O.T.C., and played Rugby for the 1st XV. When writing home to announce he had volunteered for Mesopotamia he wrote: "I have been carefully trained and it is my duty to go; and, besides, I go gladly."

HONOURS.

THE following is a continuation of the list published in the issue of February 22nd of awards to medical officers in recognition of their "conspicuous gallantry and devotion to duty" in the field:

Military Cross.

Temporary Captain Charles Humphrey Lloyd, No. 8 Field Ambulance, R.A.M.C.

For great courage in guiding squads with wounded through Masnieres and the ground south-east of Rumilly on the night of October 1st-2nd, 1918. He dressed a wounded officer in the open during a heavy burst of fire, and got him away to safety. On October 3rd he searched for wounded officers under fire, dressed their wounds, and brought them in.

Temporary Captain George Barton McCaul, R.A.M.C. (Salonica.)

His battalion took up an advanced position of readiness in Jackson's Ravine early on September 19th, 1918, and was for several hours exposed to concentrated shell fire. During this period he moved freely about attending to wounded, both of his own battalion and another unit, and showing total disregard for his personal safety. During the entire day his conduct was most exemplary, and he undoubtedly saved many lives.

Captain Alexander Edward MacDonald, C.A.M.C., attached 3rd Battalion Canadian Infantry, 1st Cent. Ontario Regiment.

During the attack on Upton Wood on August 30th and 31st, 1918, he worked in the open, under heavy fire, attending to and dressing the wounded, remaining at his duty until all the wounded were cleared, in spite of the heavy shelling. On one occasion a shell fell close to him, killing two men and severely shaking him, but he at once pulled himself together and went on with his work. His gallantry and composure were most marked.

Captain Herbert Bruce MacEwen, C.A.M.C., attached 5th Battalion, Mounted Rifles, Quebec Regiment.

While near Monchy from August 26th to 28th, 1918, he kept in close touch with the battalion in the advance, attending to the wounded in the open under heavy shell fire. He worked continuously, mostly in the open, for thirty-six hours, and was largely responsible for the small percentage of killed in the unit.

Temporary Captain James Taylor Rogers MacGill, R.A.M.C. (Salonica.)

On September 19th, 1918, he carried in wounded and dressed them, under intense machine-gun and artillery barrage. Later, on Sugar Loaf, for four hours he helped to carry in wounded after his stretcher-bearers were wounded. His courage and energy were the means of saving many lives.

Temporary Lieutenant Rob Roy MacGregor, R.A.M.C., attached 2nd Battalion Worcester Regiment.

Throughout the fighting of September 29th, 1918, south of Villers Guislain, he worked untiringly under heavy shell fire, and, though suffering from gas, attended over 200 cases. He had to carry out his work in the open, there being no available shelters.

Captain Archibald Lang McLean, A.A.M.C., attached 17th Battalion, Australian Infantry.

During the attack on August 8th, 1918, east of Villers Bretonneux, near Amiens, he followed the attacking troops with his section, tending and dressing wounded under fire on the way. Almost immediately after the objective had been taken he established his regimental aid post in the village of Warfusee, where he worked continuously under great difficulties. Later, during the advance on the following day, he established his regimental aid post almost on the jumping-off line, where he tended and cared for wounded under heavy artillery fire. His energy and zeal saved many lives.

Captain John Davis Marks, N.Z.M.C., attached 2nd Battalion, Canterbury Rifles.

During operations near Ruyaulcourt on September 4th to 5th, 1918, while his regimental aid post was twice heavily shelled and several casualties occurred, he continued at duty, binding men up and shifting them to shelter in spite of the heavy bombardment. Again on September 7th, when the regimental aid post had been established on the edge of Havrincourt Wood, near Quotient Avenue, the enemy bombarded the place heavily. Under this fire, which had inflicted a number of casualties, he continued with his work. On both occasions his devotion to duty was admirable.

Captain Christopher Norman Matheson, 7th Field Ambulance, A.A.M.C., attached 27th Battalion, Australian Imperial Forces.

In the attack east of Mont St. Quentin, on September 2nd, 1918, he pushed forward behind the first waves, attending the wounded under heavy artillery and machine-gun fire. Later he established a forward post, and through his gallantry and his untiring exertion he saved many lives by getting their wounds expeditiously dressed and evacuating them quickly.

Captain Alexander Paterson Murphy, 1st Field Ambulance, A.A.M.C., attached 12th Battalion, Australian Infantry.

While near Peronne, from August 23rd to 26th, 1918, as regimental medical officer of a battalion, he placed his aid post in a railway cutting, where he dressed the wounded of his own and other units under machine-gun and shell fire. When all our wounded had been cleared he went out and attended to the enemy in the open; while doing so a shell burst in their midst, killing his orderly, a stretcher-bearer, and several wounded, and wounding him. He continued at work for another twenty-four hours before reporting for relief.

Captain Edgar Llewellyn Foot Nash, R.A.M.C.(S.R.), attached 1st Battalion, Essex Regiment.

For contempt of danger in caring for wounded under heavy shell fire at Achiet-le-Grand on August 23rd, 1918. He moved about in the open under heavy shelling, dressing men's wounds and preparing them for immediate evacuation with the greatest coolness, setting a very fine example to his staff and to the bearers. It was due to his untiring efforts that the wounded were so successfully and quickly evacuated.

Captain Reginald Edward Nowland, A.A.M.C., attached 157th Brigade, R.F.A.

On September 27th, 1918, near Ypres, the leading battery came under heavy shell fire and suffered many casualties. Ignoring all danger, he established an aid post on the roadside and attended to the wounded. Later in the day, when the batteries moved further forward, he visited all the gun positions and attended to the wounded.

Captain Laurel Cole Palmer, 13th Field Ambulance, C.A.M.C.

During operations from September 2nd-4th, 1918, near Arras, while in charge of squads evacuating wounded, he kept close up to the advancing infantry, directing the collecting and dressing of casualties. The enemy shelling and machine-gun fire was intense, but time after time he went through the barrage with a total disregard of personal safety. On the night of September 2nd the relay post was heavily shelled with gas, but he kept at his work, protected his wounded, and got them to a place of safety. He showed great courage and devotion to duty.

Temporary Captain (acting Major) Donovan Blaise Pascall, No. 11 Field Ambulance, R.A.M.C.

During the operations astride the Arras-Cambrai road on September 2nd, 1918, he was in charge of the evacuation of casualties from the front, and repeatedly made journeys over the shell-swept area around Dury and Eterpigny, locating and maintaining touch with regimental aid posts and bearer posts. Through his disregard of danger the casualties were speedily evacuated.

Captain (now Major) William James Ellery Phillips, 11th Field Ambulance, A.A.M.C.

On September 6th and 7th, 1918, during an advance on Roisel, he worked continuously for forty-eight hours in charge of the evacuation of the wounded from the forward aid posts. Although the area was heavily shelled, he got his ambulance cars right up and cleared the wounded with great rapidity. His energy and perseverance set a splendid example to those working with him.

Temporary Captain Harrold John Pickering, No. 15 Field Ambulance, R.A.M.C.

For conspicuous gallantry and devotion to duty from September 25th to 30th, 1918, near Cambrai, especially one night, when, hearing that there was a congestion of wounded at a regimental aid post, he went forward through heavy shell fire and remained all night, collecting bearers from every available source and supervising the clearing of the post. Throughout the whole period he only had one other officer to assist him in the forward area. He inspired his men with his own cheerfulness, energy, and endurance.

(To be continued.)

The King has approved of the award of the Distinguished Service Cross to Surgeon Lieutenant Walter Grimshaw Bigger, R.N.

For services with the Royal Marine Artillery Siege Gun Detachment in Flanders. On May 29th, 1918, while he was attending to the wounded in "Carnac" gun position a second shell burst in embrasure. Surgeon Lieutenant Bigger continued his work with noteworthy calmness and devotion to duty. The coolness under fire displayed by this officer on other occasions has gained for him the confidence of the officers and men under his medical charge.

The President of the Portuguese Republic has conferred the Military Order of Avis—Third Class—upon Surgeon Lieutenant Commander Basil Taylor, R.N., for distinguished services rendered during the war.

Ireland.

MINISTRY OF HEALTH FOR IRELAND.

THE Irish Branch of the Medical Council has issued a memorandum giving some reasons why Ireland should be included in the Ministry of Health Bill. The limitations of the powers of the county councils and urban sanitary authorities are set forth with the explanation that "Irish public health legislation is nearly all permissive and is therefore largely ignored." The state of many of the county and union infirmaries is dealt with, as well as unsuitable dispensary dépôts. The memorandum contains the following passages:

There are approximately 1,000 practitioners engaged in the Poor Law and county infirmary medical services, elected to their posts by the boards of guardians and committees, without any regard to their professional qualifications; the dispensary doctor being *ipso facto* medical officer of health for the district. . . . If the Ministries of Health Bill is applied to Ireland, with necessary alterations, the entire public health, medical and hospital services must be recast; medical relief must be separated from the relief of pauperism and destitution. All health legislation must be made obligatory. The medical and hospital services must be co-ordinated, and together be put under the control of either a special health board, composed chiefly of medical men, or remain under the control of a department of the Local Government Board, reinforced by the addition of several medical members, to either of which the administration of the sanatorium benefit of the Insurance Act should be transferred.

The proposed remedies include the appointment of a central authority directly responsible to Parliament; a statutory committee; and the establishment of a national or State medical service. Other alterations suggested

refer to notification of infectious diseases, the cure and prevention of tuberculosis, and provision for the medical inspection of school children.

QUEEN'S UNIVERSITY, BELFAST.

At the meeting of the senate of Queen's University, Belfast, on February 19th, Colonel Thomas Sinclair, C.B., F.R.C.S.Eng., Professor of Surgery, lately Consulting Surgeon, B.E.F., France, was unanimously appointed Registrar of the University in place of Dr. Johnson Symington, F.R.S., Professor of Anatomy, who has resigned through ill health. The registrarship is to a great extent an honorary post, and carries with it a seat on the Senate. The resignation of Professor Symington causes great regret, and much sympathy is felt for him in his illness; it was hoped at first that he might have been able to resume his full duties; but this proved impossible. We hope that his original anatomical investigations and researches, and his studies on brain sections will be carried on from time to time. The appointment of Professor Sinclair as registrar will be a most popular one, and his three years at the front will enable him to bring before the Senate first-hand information of the spirit of the day, and of the requirements of the student as seen in France and in the army. He will be a source of strength to the Senate.

ROYAL VICTORIA HOSPITAL, BELFAST.

At the meeting of the Board of Management of the Royal Victoria Hospital on February 19th, Dr. J. A. Lindsay, F.R.C.P., Professor of Medicine in the Queen's University, Belfast, was elected chairman of the board in the place of Sir William Crawford, who had resigned through ill health. This is the first time that a member of the active medical staff has been put in this honourable and responsible position; it is evidence of the cordial good will that exists between the board of management and the medical staff. In the active times of reconstruction that lie ahead, a full and clear understanding, pleasant relations, and mutual trust between the two bodies will be of enormous importance and help. Sir William Crawford, who has been twice elected chairman for five years, sent a cheque for £1,000 as a donation to the funds of the hospital with his letter of resignation.

ULSTER MEDICAL SOCIETY.

At the meeting of the society on February 20th, when Dr. James Colville, President, occupied the chair, Professor Johnson Symington was elected an Honorary Fellow for his researches in anatomy. Colonel T. Sinclair, C.B., F.R.C.S., read a paper on the war surgery of the chest. He gave a full and lucid exposition of the subject and stated the results of his experience during his three years' work in France. A large number of Fellows expressed their thanks to Professor Sinclair for what many felt will prove the basis of a new era in the surgery of the chest.

Correspondence.

THE TREATMENT OF WOUND SHOCK.

SIR,—Dr. Leyton is quite correct in saying, in the issue of February 15th, that Pugliese used a weak solution of gum arabic in the course of experiments on animals whose blood pressure was low on account of section of the spinal cord. The rise of pressure he obtained was not more permanent than that which simple saline solutions are capable of producing. The fact that his solution was far too weak to do otherwise shows that the idea was of a totally different kind from that which lies at the basis of my work. Indeed, he speaks of an action of gum on the myocardium, and through the vagus nerves. Japelli had previously used gelatin solutions up to 20 per cent. in concentration to increase the viscosity of the blood: again another question. I believe that the addition of a small quantity of gum arabic to solutions for the perfusion of the isolated heart has been tried, but I am unable to find the reference. In this case, the idea seems to have been to provide some kind of nutrient. Knowlton's use of it in 1911, to prevent the diuretic action of saline, is the nearest approach to mine, as I pointed out in my original paper.

It is not my object, however, to deprive Dr. Pugliese of the credit of his experiments, which are of interest from another point of view; but it is of some importance, if gum saline is to be used for shock or haemorrhage in such a way as to be of value, that the reason of this value should be properly understood. It has been pointed out to me that I ought to state the course of the experiments and reasoning which led me to the selection of a particular strength of solution. I would therefore ask a brief space to do this.

In the course of certain experiments which were attended by a fall in blood pressure, it was my wish to be able to raise this pressure permanently so as to maintain the animal in better condition. In order to find a substitute for blood I removed a known volume by bleeding and then replaced it at once by an equal volume of various solutions. Naturally, the first to be tested was isotonic saline (Ringer's solution). It was found that the original pressure was only partially restored. This was clearly due to defective viscosity, since the peripheral resistance is proportional to the viscosity of the blood. It might have been overcome by injecting a larger volume. In any case, the low viscosity would not have been serious if the rise actually produced had been permanent. But the blood pressure had returned to its old level in half an hour or so. The saline solution had left the circulation, as could be shown by determination of the haemoglobin value of the blood. The saline solution was clearly of no value, as might, indeed, have been foreseen from the work of Sherrington and Copeman. Hypertonic saline was very little better, nor were additions of calcium salts or bicarbonate.

The cause of this rapid loss of mere salt solutions becomes clear on consideration of the work of Starling and of Scott on the permeability of the blood vessels. The reason why normal plasma does not leave the circulation is on account of the presence in it of colloids which have an osmotic pressure, together with the fact that the wall of the blood vessels is freely permeable to water and salts, impermeable to colloids. Hence the osmotic pressure of the colloids is effective in attracting water and thus balancing that lost by filtration. So that if a fluid injected is to remain, it must contain a colloid in sufficient amount to have an osmotic pressure equal to that of those in the blood. On testing various possible colloids I found that gelatin in 6 per cent. solution, or gum arabic in 7 per cent., were the only practicable ones, and there are well known objections to the use of gelatin. Since 7 per cent. gum arabic is not sufficiently concentrated to be isotonic with the blood corpuscles, it was necessary to dissolve it in 0.9 per cent. sodium chloride.

On replacing lost blood by 7 per cent. gum saline I found that not only was the arterial pressure restored to its normal value, owing to the viscosity of the solution being as great as that of blood, but that the effect was permanent—a matter of much more importance.

It was found that good samples of gum arabic are perfectly innocuous and devoid of any chemical or drug-like action. The effect is purely physical. I refer to this because it appears that there are mistaken ideas current that it has some sort of drug-like properties.

Since wound shock had been shown to be associated with decrease in the volume of blood in circulation, just as after haemorrhage, it was obvious that gum solutions should be tested in such conditions, experimental and clinical. The results were favourable, but need not be further referred to here.

It will be seen that the crucial factor is just the concentration of the solution, and that the use of weak solutions cannot in any sense be regarded as an anticipation of the correct method, which depends on having a colloidal osmotic pressure equal to that of the blood. The Italians have no cause of grievance. Indeed, it might be said that if Dr. Pugliese had made acquaintance with Starling's work on the production of lymph, he might have made important discoveries in his experiments. Hogan introduced a solution containing a small amount of gelatin, on the ground of its "combination" with water. But having missed the important property of osmotic pressure, his solution was ineffective.

If the normal impermeability of the vessel wall to colloids is damaged by prolonged asphyxia, this colloidal osmotic pressure is no longer effective. In such a condition, not only do gum solutions leave the vessels, but

blood plasma itself does. Hence in late stages of shock both gum saline and blood transfusions are useless—an unfortunate experience too often met with in the case of wounded men.—I am, etc.,

University College, London, Feb. 21st. W. M. BAYLISS.

THE DEFINITION OF "PRIORITY."

SIR,—In your issue of February 15th there is a letter signed by Dr. A. S. Leyton quoting a suggestion made by Pugliese in 1912 to the effect that injections of "gum Ringer" might be useful in cases of considerable haemorrhage.

So far I have no quarrel with the author. When he implies that the credit of this treatment is due to Pugliese rather than to Bayliss, I must emphatically object.

As the number of workers in science grows it is inevitable that many minds must strike on the same idea. I contend for the principle that true priority goes to the man who is first in the quality of the work with which he supports his ideas. The whole quality of scientific work would deteriorate if the laurels of research were to go to the man who thrust his ideas upon the world when he should sit down to make them good. I have no special knowledge of the value of the treatment in question, but till Dr. Leyton can bring forward on behalf of Pugliese some body of work comparable with that of Bayliss, I cannot but think that Bayliss should have the credit for the treatment.—I am, etc.,

London, S.W., Feb. 20th. JOSEPH BARCROFT.

URETERS AND THEIR ORIFICES IN GUNSHOT WOUNDS OF THE SPINE.

SIR,—The letter by Mr. Thomson Walker in your issue of February 15th comments on my article on the state of the ureters in gunshot wounds of the spine; but it passes from that to the larger question of the general treatment by British surgeons in France of the bladder in casualties with paraplegia, and it condemns our supposed indifference to Mr. Thomson Walker's suggestion of February, 1917, that early cystostomy should be the routine treatment for all such cases, so as to avoid the introduction by catheterization of an infection that sooner or later would prove fatal when it ascended to the kidneys.

The dangers of catheterization have long been familiar to all surgeons, and an early suprapubic cystostomy was advocated and practised, among others, by Sir Victor Horsley in civil injuries before the war. This procedure was considered at once when hospitals began work in France, and was soon laid aside as impracticable. It was again tried in 1917 in deference to the forcible arguments of Mr. Thomson Walker, and once more rejected owing to the practical difficulties of nursing such patients during the movements of active service.

The last method employed has been that of avoiding all surgical interference or catheterization, and of emptying the bladder by massage and pressure from without until a satisfactory evacuation was ultimately established by periodic reflex micturition. This treatment had often to be attempted in cases where infection of the bladder was present, and it therefore became necessary to know whether the bladder paralysis was associated with similar relaxation of the ureters and of their valved entrance to the bladder, because if any such paralytic dilatation existed at an early date, bladder massage would introduce danger by forcing infection up into the pelvis of the kidneys.

My paper was written purely in reference to this question. It was necessary to ascertain the condition of the ureteric valves and the power of the ureteric peristalsis at the early date when massage had to be undertaken. Mr. Thomson Walker objects to my quoting observations made within the first few days of the spinal injury—that is, at the very time when we wish to know what is occurring—and he disregards my observations on the existence of peristalsis. What I saw—and some of these observations were made in 1916, when these questions were under discussion in France—satisfied me that the ureter after paraplegia retained its power to shut off the renal pelvis from the contents of the bladder, and that in consequence massage was to that extent justifiable. This was only one small point in a general argument, but it was necessary to discuss it so that no point should be neglected.

Dr. Fearnsides's excellent article in *Brain* is familiar to every one as being chiefly a review of all previous work, and a direct quotation from it hardly deserves blame as an attempt to ascribe to the reviewer the work of other men. I regret that Mr. Thomson Walker found occasion for protest in this detail; I am equally surprised that he should have found in my brief paper on the ureters occasion to criticize so harshly the surgical practice of myself and my colleagues in France, and to write on the detail of this paper a review that neglects the argument to which my paper was directed and incorrectly describes the progress of work and of thought in France.—I am, etc.,

France, Feb. 21st. ANDREW FULLERTON.

PREVENTION OF VENEREAL DISEASE.

SIR,—The article on the treatment of venereal disease, by Sir Archdall Reid and Surgeon Commander P. Hamilton Boyden, R.N., which appeared in the JOURNAL for February 8th, is a contribution of great importance to the increasing evidence of the fact that the infections of syphilis and gonorrhoea can be immensely reduced by the careful and prompt use of a simple disinfectant. It shows conclusively: (1) That the element of the period of time which passes between exposure to risk and use of the disinfectant is of prime importance, greater even than that of the actual kind of disinfectant employed; (2) that the mode of application of the solution of permanganate recommended by the writers is simple and requires no special skill, thus disposing of the oft-repeated objection by those who oppose medical prevention, that the lack of special skill would render this practice futile.

Since, then, the good results of the earliest possible use of such a simple disinfectant as potassium permanganate have now been proved so successfully, surely this matter should be fully considered by a responsible body of medical experts before any public scheme is adopted to bring this necessary sanitary measure to the knowledge of the civilian community in a practical manner.—I am, etc.,

London, W., Feb. 24th. H. BRYAN DONKIN.

ASYLUM MEDICAL OFFICERS.

SIR,—It is reported that at a recent conference of asylum authorities a recommendation was made that asylum medical officers should be required to take a diploma in mental diseases.

The asylum medical officer must take the diploma, presumably at his own expense in time, effort, and money, in order that the scientific tone and efficiency of the asylum service may be raised. And is he to get any reward for thus having better fitted himself to look after his patients? Not a penny. I hear of no recommendation to increase his salary or to remove any of his very real grievances. Consider his position:

1. He is actually forbidden to marry. I cannot believe that this is realized by the rest of the profession. Imagine what capital Labour would make out of such despotism!
2. He has, accordingly, to live an "institution life"—that is, an unnatural existence amid morbid surroundings which are much more depressing than those due to bodily disease only, and usually at some distance from any of the relaxations and amusements provided by town life.
3. His chances of becoming a superintendent towards the end of his days are about ten to one against.
4. His private life has about as much privacy as a goldfish's. Well, perhaps, I exaggerate just a little. I do not really think that he is under observation whilst in his bath, but in most asylums his comings and goings are under supervision and scrutiny. He must sign a book when he goes out and sign again when he returns. The time when he enters and leaves his wards is booked, so little is he to be trusted.
5. He sees bonuses and increases of salary being granted everywhere, but there is nothing for him. He has no union to look after his interest, no representatives to put his case before the Asylums Board, and consequently his salary remains at its pre-war level, on the assumption that "Thems as don't ask don't want."

The fact of the matter is, that if the asylum medical service is to take its place (even though it be the last place) in the march of progress and reconstruction, it will have to be made much more attractive and worth while to get the right men.

Is anything going to be done? I should like to sign my name, but it would be impolitic to do so. I feel confident.

however, that I am expressing the views of many colleagues who, like myself, are

February 24th. "Stuck-in-the-Mud."

*** The reply of the Home Secretary to the question put in the House of Commons by Sir Watson Cheyne on February 20th will be found at p. 258.

Universities and Colleges.

UNIVERSITY OF CAMBRIDGE.

At a congregation held on February 22nd the degree of Doctor of Medicine was conferred upon E. D. Adrian and J. F. Taylor.

UNIVERSITY OF LONDON.

A meeting of the Senate was held on January 29th.

Dr. L. S. Dudgeon, C.M.G., late temporary Colonel A.M.S., will give a course of ten lectures at St. Thomas's Hospital on diseases met with in the subtropical war areas, on Wednesdays and Fridays, at 5 p.m., beginning on March 5th. The lectures, which are open to students of the university and to medical practitioners, will be illustrated by lantern slides, diagrams, and microscopical preparations.

The Lindley Studentship of £100 and the University Studentship in Physiology, value £50, will be awarded to students qualified to undertake research in physiology. Particulars can be obtained on application to the Academic Registrar.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

An ordinary council was held on February 13th, when Sir George Makins, President, was in the chair.

Diplomas of membership were granted to sixty-two candidates found qualified at the recent examination, and diplomas in public health to seven candidates found qualified by the Royal Colleges of Physicians and Surgeons.

A donation of fifty guineas was made to the War Emergency Fund of the Royal Medical Benevolent Fund.

Dr. W. S. A. Griffith was reappointed to represent the College on the Central Midwives Board for the period of one year from March 31st, 1919, and Mr. G. Bellingham Smith the representative of the College on the Managing Committee of the British Hospital for Mothers and Babies, Woolwich.

Sir Charles Ballance was appointed Bradshaw lecturer for the ensuing year.

First Examination for the Fellowship: Amended Regulation.

In the first of a series of regulations recently made in connexion with this examination (British Medical Journal, February 1st, p. 145), the words "who hold or have held commissions" were deleted from the previous form, and the amended rule ran as follows:

"Notice is hereby given that surgeons who have done commendable surgical work in connexion with His Majesty's Forces during the war, may be admitted to the first examination for the diploma of Fellow on special conditions." (The word "surgeons" includes men and women.)

Election of Fellows into the Council.

A meeting of the Fellows will be held at the College on Thursday, July 3rd next, for the election of two Fellows into the Council in the vacancies occasioned by the retirement in rotation of Sir Berkeley G. A. Moynihan, and by the death of Mr. L. A. Dunn.

First Examination for the Fellowship.

Justice (B.E.F.) writes: I see in your issue of February 1st a notice by the Royal College of Surgeons of England of a special examination for the Primary Fellowship in May, 1919. The examination is for those "surgeons who hold or have held commissions in His Majesty's Forces during the war and who have done commendable surgical work during such service." The notice continues by saying that "the questions asked will have a direct bearing on practical surgery, and will not include morphology, embryology, histological or chemical methods or practical examination in the use of the apparatus of the physiological laboratory."

The medical officers to whom these special regulations apply are those who have been lucky enough to have had opportunities of gaining surgical experience and to have escaped the majority of the risks of war during the past four years, because they must have done their work either at hospitals in England, base hospitals, or casualty clearing stations with one of the Expeditionary Forces. The medical officers who have served with battalions or field ambulances are obviously unable to enter for this special examination because, through no fault of their own, they have had no opportunity of gaining surgical experience or of doing "commendable surgical work."

These latter, if they want to take the Primary Fellowship examination, will quite rightly have to do so under the usual peace-time conditions.

Why does the College give this section of medical officers such privileges when through their good fortune during the war they already have such a great advantage over their *confrères* of the "forward area"? I appeal through your columns to all the members of the medical profession who have any idea of justice to exert their influence to prevent this very unfair special examination from being held. As I am not yet demobilized I enclose my card.

Obituary.

A. M. PATERSON, M.D.Edin., F.R.C.S.Eng.,

Lieutenant-Colonel R.A.M.C.,

Professor of Anatomy, University of Liverpool; Assistant Inspector Special Military Surgery.

The death of Professor Paterson, which took place rather suddenly on February 13th, has caused deep regret to all who knew him. Four days previously, in the course of his military duties, he had returned from London feeling indisposed; bronchopneumonia supervened, and he passed away.

Andrew Melville Paterson was born in Manchester in 1862, and was the son of a Presbyterian minister. He received his general education at Manchester Grammar School, and afterwards studied at Owens College. He graduated M.B., C.M.Edin. in 1883 with first-class honours, and in 1886 became M.D., receiving the Gold Medal for his thesis on the spinal nervous system of mammalia. At the outset of his medical studies Professor Paterson was irresistibly attracted to anatomy. He held successively the post of a demonstrator of anatomy in the University of Edinburgh, and demonstrator of anatomy at Owens College.

In 1888 he was appointed to the newly-founded chair of anatomy in University College, Dundee, and held that post with distinction until in 1894 he was elected to the Derby chair of anatomy in the University of Liverpool, which he held at the time of his death. Under his guidance the anatomical school of the university made great progress, and the anatomical department was so greatly developed under his care that it may be described as his best memorial. He was untiring in making complete the teaching arrangements for the subject of which he was so brilliant an exponent. As a lecturer Professor Paterson made the "dry bones of anatomy live," and as a blackboard delineator was unrivalled. Indeed, it may be said he built up the subject matter of his lectures by rapid and graphic illustration before the eyes of his hearers. A good disciplinarian, he riveted the attention of the students by his force of character and his pictorial ability, and made his lectures always interesting and attractive. Professor Paterson was dean of the medical faculty from 1896 to 1903, and he played a prominent part in the development and arrangement of the structural additions to the university. In 1903 Professor Paterson as Hunterian Professor delivered three lectures on the development and morphology of the sternum, based on the results of his own researches carried out in the midst of his multifarious duties. In 1910 he was elected a Fellow of the Royal College of Surgeons of England. He was an examiner in anatomy at the Universities of Oxford, Cambridge, Durham, and London, for the Indian Medical Service, and for the Conjoint Board in England. He took a great interest in the establishment of the Liverpool Dental Hospital, and as treasurer was most indefatigable in raising funds for its maintenance. He always regretted that dentistry had not remained, as the other specialties, an integral part of medicine. Professor Paterson was the author of many anatomical papers, and was a past president of the Anatomical Society, contributed to Cunningham's *Text-book of Anatomy*, and wrote a *Manual of Embryology*.

At the beginning of 1917 Professor Paterson became assistant inspector of military orthopaedics, and as chief of staff to Major-General Sir Robert Jones was strenuously occupied up to the time of his death. A man of unbounding energy concentrated in not too strong a body, Professor Paterson could not remain inactive, and there is no doubt that his military duties hastened the end. Professor Paterson sought recreation in golf, and was a past captain of the Royal Liverpool Club.

In discussion he was forceful, a clear speaker and to the point, socially genial, and in matters in which he was deeply interested at times uncompromising in his views.

The funeral service took place at Mossley Hill Church, where representatives of the university, prominent citizens, and numerous friends were assembled to pay their tribute

to the memory of a well spent and all too short a life. Professor Paterson leaves a widow, a son and three daughters. One son, Lieutenant Paterson, lost his life in the battle of Jutland.

Professor WILLIAM WRIGHT of the London Hospital, in the course of an appreciation expressing the affection and esteem with which he regarded Professor Paterson, an intimate friend of fifteen years, writes: He thought rapidly, he formed his judgements rapidly, he wrote rapidly whether in rhyme or prose, he sketched rapidly, and moved rapidly. He was pre-eminently one who accomplished things, and he has left, in the University of Liverpool, an anatomical department, in my opinion, second to none in equipment, arrangement, and endowment. As an anatomist he was most regular in his attendances at the meetings of the Anatomical Society, and one of the most frequent contributors to its proceedings. Paterson did not perhaps quite fulfil the brilliant promise of his early days—a fact which he was not slow to acknowledge, and which he regretfully explained as due to his having allowed himself to become engrossed in administrative duties and in academic and polemical discussions. Still, he has a large number of original, thoughtful, and highly important papers on anatomy to his credit, his contributions to our knowledge of the sternum, the sacrum, and the limb plexuses being of special value. As an anatomist he formed, too, an interesting link with the past, having served as a demonstrator to the late Professor Morrison Watson of Manchester, the earliest occupant, I believe, in the provinces of a chair of human anatomy. Finally, no mention of Paterson would be anything but incomplete which did not refer to the warm generosity which he showed for any cause in which his interest and sympathy had been enlisted. Altogether he was a man who inspired warm and lasting affection, and he will be long and deeply mourned by an unusually large circle of friends.

HARRY BLAKEWAY, M.S., B.Sc.LOND., F.R.C.S.,

Resident Assistant Surgeon St. Bartholomew's Hospital.

WE regret to announce the death from pneumonia, on February 15th, at the early age of 35, of Mr. Harry Blakeway. Not many weeks have passed since St. Bartholomew's Hospital had to mourn the loss of one of the most brilliant members of its younger medical staff in the person of Dr. A. E. Stansfeld, and now the school has received yet another blow by the death of Mr. Blakeway, who was surgical registrar and resident assistant surgeon. Mr. Blakeway had had a brilliant professional career, and there was every prospect of his adding lustre to it as the years went by. He took the B.Sc. degree of the University of London in 1905 and the M.B. and B.S. degrees in 1908. In 1910 he became F.R.C.S.Eng., and took the degree of M.S.London. In his student days he won almost every available scholarship and prize open to the men of his school and year, and he filled all the appointments at St. Bartholomew's leading up to those which he was holding at the time of his death. He was also assistant surgeon to the Victoria Hospital for Children and to the London Truss Society. He contributed freely to medical literature, and delivered a brilliant Hunterian lecture on the operative treatment of hare-lip and cleft palate in 1915.

During the last years of his life it fell to Blakeway's lot to be one of those who, by unceasing zeal and labour, kept the flag flying at the school of his adoption. As resident assistant surgeon much surgical work came his way, and he developed the highest standard of professional efficiency. And now, in the prime of his life and the strength of his manhood, he has been taken from us. For those who knew him intimately as a good and genial friend—an ardent and untiring enthusiast—his place can never be filled. His school mourns deeply the loss of another of her brilliant younger sons. R. M. V.

We are indebted to Professor ARTHUR KEITH for the following appreciation:

Mr. Blakeway, if his life had been spared, would have continued the line of surgeon-anatomists which has been produced in the dissecting room of St. Bartholemew's Hospital since the time of Percival Pott onwards. Realizing that there was still much to be done before our surgical measures for the remedy of congenital clefts of the palate and lip could be counted perfect, he set out to reinvestigate the anatomy and physiology of the parts concerned. The result of that investigation appeared in the *Journal of Anatomy and Physiology* (1914, vol. 48, p. 409)—(now the *Journal of Anatomy*, the organ of British anatomists). The article is illustrated from his own dissections, which were excellently conceived and most skilfully executed; altogether that article of Mr. Blakeway's is one of the best sources of information relating to the practical anatomy of the palate. While serving as a demonstrator of anatomy in the school of his hospital, under Dr. Macphail, he joined the Anatomical Society of Great Britain and Ireland and took an active share in its business and proceedings. Only a year ago he brought before the society one of the most remarkable cases of abnormality of the heart ever recorded. It was the case of a child in whom the aortic orifice had become blocked up during development, so that the blood in the left ventricle had no means of escape. By some obscure process the lumen of the anterior interventricular artery came to open on the wall of the left ventricle; by this new communication the ventricle pumped blood into the aorta through the left coronary artery. The case illustrates an extraordinary adaptative modification, the importance of which Mr. Blakeway was quick to perceive and, fortunately, also qualified to record in a full and precise manner. His death is a loss to British anatomy as well as to British surgery.

RAPHAEL BLANCHARD,

Professor of Parasitology, Paris.

PROFESSOR RAPHAEL BLANCHARD, who died suddenly on February 10th, at the age of 62, graduated M.D. at the University of Paris in 1882, and after working as demonstrator to Charles Robin and Paul Bert became *professeur agrégé* in 1883; he was elected to the Academy of Medicine at the age of 37, and during the last seven years had been its annual secretary. He became professor of medical natural history in 1897. In addition to his life work, which he devoted to what he himself called "medical zoology," he wrote much on anthropology and the history of medicine, illustrating the latter subject by a volume entitled *Corpus Inscriptionum*. He established the *Archives de parasitologie* in 1898, and in 1902 founded the Institute of Colonial Medicine. In 1905 he published a volume entitled *Histoire naturelle et médicale des Moustiques*, which had a great success. It is to be noted that in the following year the title of his chair was changed to that of parasitology. All these activities did not exhaust his energies; he was one of the founders of the Zoological Society of France, and its secretary-general for twenty-two years; he was one of the organizers of the international congress of zoology, which adopted rules for zoological nomenclature, and in 1898 he was president of the international commission on this subject.

We are indebted to Sir PATRICK MANSON for the following tribute to Professor Blanchard's memory and achievements:

Not a few of us in this country have read with feelings of personal loss the intimation of the death of Professor Raphael Anatole Blanchard. His record as a zoologist, and more particularly as a writer and investigator in zoology having special bearings on medicine, was a remarkable one. His book *Zoologie Médicale* was for long the great textbook on the subject, and although somewhat out of date cannot be dispensed with even at the present day. Naturally, recent developments in tropical medicine, which to all intents and purposes is tropical parasitology, brought Professor Blanchard into prominence in this as in other countries interested in that subject, and Professor Blanchard was looked upon by the profession in this country as *par excellence* the referee in any matter relating to tropical parasitology. Apart from his accomplishments in this field of science, Professor Blanchard, from his *bonhomie*, his gifts as a public speaker, his friendliness towards this country, his hospitality to our countrymen who visited Paris, and in many other ways, gained a large circle of friends in Great Britain. No one was more welcome in this country—particularly among the votaries of tropical medicine—than Professor Blanchard, and public and social gatherings were regarded as incomplete unless he was present. To listen to one of his after-dinner speeches, or to one of his disquisitions at any of our societies, was a treat.

There was no French writer who could express himself as lucidly on an obscure zoological or pathological subject

as Professor Blanchard, and there was no French orator who could carry his audience with him so easily and so enthusiastically as Professor Blanchard; the merest tyro of a French linguist could understand and follow him. His personal appearance, his gestures, his voice, and his simple logical language were a treat to witness and to hear. He made many visits to this country, and was always a welcome guest in houses and at social gatherings, and it is with feelings of great regret that we know we shall see him no more.

WE regret to see the announcement of the death from influenza of Professor Chantemesse, the incumbent of the chair of hygiene in Paris, and well known as an authority on infectious diseases.

DEPUTY INSPECTOR-GENERAL GEORGE BELL MURRAY, R.N. (retired), died at Moffat on February 4th, aged 76. He was educated at Edinburgh University and in the medical school of the Edinburgh Royal College of Surgeons. He took the diplomas of L.R.C.P. and S.Edin. in 1865, and entering the navy as assistant surgeon attained the rank of fleet surgeon on September 16th, 1888, and retired with the honorary rank of D.I.G. on December 24th, 1897. He received a Greenwich Hospital pension on February 28th, 1914. He served in the Zulu war of 1879 with a battalion of Royal Marines.

Medical News.

THE annual meeting of the Royal Medical Benevolent Fund will be held at 11, Chandos Street, W.1, on Tuesday, March 11th, at 4.15 p.m.

SIR NESTOR TIRARD has been appointed consulting physician to King's College Hospital, and has been elected Emeritus Professor of Medicine by the Council of King's College, London.

WE regret to record the death, on February 24th, of Dr. William Stephenson, Emeritus Professor of Midwifery in the University of Aberdeen, in his 82nd year, and hope to publish a short biography in a subsequent issue.

THE National Birth Rate Commission has appointed a watching committee of the Ministry of Health Bill, which includes Colonel C. J. Bond, C.M.G., A.M.S., and Dr. Amand Routh as two of the representatives of the Mothers' Union.

DR. T. A. HENRY, late superintendent of the laboratories at the Imperial Institute, London, has been appointed director of the Wellcome Chemical Research Laboratories, London. Dr. F. L. Pyman, the former director of these laboratories, has accepted the professorship of technological chemistry in the Manchester Municipal College of Technology, and in the University of Manchester.

AT its meeting on February 24th, 1919, the Executive Committee of the General Medical Council considered the advisability of withdrawing the temporary alterations in the *British Pharmacopoeia* published in the *Gazettes* of July 27th, 1917, and March 29th, 1918, arising out of the scarcity during the war of sugar, glycerin, and certain oils and fats. It decided to revoke the alterations and amendments, which will be withdrawn on and after April 30th, 1919.

AT a meeting of the council of the Medical Defence Union on February 20th, when Sir John Tweedy was in the chair, resolutions relating to the notification and prevention of venereal diseases were adopted. The first urged the medical profession to resist, because it would be a breach of confidence between patient and doctor, and would lead to concealment of disease. The second advised the profession to recommend patients to adopt the very simple and easily carried out measures of prophylaxis proved to be effective in the army and navy.

WHEN the beds reserved in St. Andrew's Hospital, Dollis Hill, for military cases are no longer required by the War Office the hospital will wholly resume the work for which it was chiefly founded—namely, the gratuitous medical and surgical treatment of gentlepeople of limited means, with nursing and maintenance at as moderate a charge as possible. The hospital is well situated, and is served by the Brondesbury and Willesden Green stations of the Metropolitan Railway from Baker Street. The administrator and treasurer of the hospital is Mgr. M. E. Carton de Wiart, Archbishop's House, Westminster, and the medical committee consists of Dr. Norman Moore, Mr. Gordon Watson, C.M.G., and Dr. W. P. S. Branson.

Letters, Notes, and Answers.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

The postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Attiology, Westrand, London*; telephone, 2631, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London*; telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Medisecra, Westrand, London*; telephone, 2634, Gerrard.

The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin.

The address of the Central Medical War Committee for England and Wales is 429, Strand, London, W.C.2; that of the Reference Committee of the Royal Colleges in London is the Examination Hall, 8, Queen Square, Bloomsbury, W.C.1; and that of the Scottish Medical Service Emergency Committee is Royal College of Physicians, Edinburgh.

QUERIES AND ANSWERS.

M.O.H., whose son has undergone amputation in the lower part of the left forearm for wound in action, asks for advice. The young man was about to enter the medical profession when the war broke out. His father asks for opinions as to the desirability of his now attempting to qualify.

LETTERS, NOTES, ETC.

THE TREATMENT OF PNEUMONIA.

DR. J. BEARD, D Sc. (Edinburgh) writes: As it is a matter of life and death to multitudes of people, and since the medical profession would appear to to be quite helpless in face of this fell disease, I hope very earnestly that you will allow me to state the scientific conclusion at which some years ago I arrived concerning the proper treatment of pneumonia. For the grounds of my conclusion I refer any one interested to a paper of mine, "On the occurrence of dextro-rotatory albumins in organic nature" (*Medical Record*, March 29th, 1913; also in *Biologisches Centralblatt*, vol. 33, 1913), for the scientific grounds. A year or two before the recent war I was discussing with a medical friend certain cases of a tropical disease (malaria), which he had treated by means of injections of pancreatic ferments (Fairchild). At the time he was playing on the piano one of Brahms's pieces. "Of course," I remarked, referring to one case complicated by pneumonia (which he had not treated while the patient was suffering from the pneumonia), 'the pancreatic ferments would cure pneumonia." He turned from the instrument and said: "We'll soon try that." This conversation took place at least five years ago, and so far as I am aware the promise has never been fulfilled. However, the death-rate from pneumonia is at present quite appalling, and it is my firm conviction that this death-rate would be considerably decreased, if not abolished, by the administration of, say, six injections of the trypsin-amylopsin powder (Fairchild). Intramuscular injections might suffice, but intravenous would be preferable. This treatment would not kill the patients, though in very many cases the pneumonia seems to have got into the way of doing so.

THE SAPPER'S LEAVE.

LIEUTENANT R. WARING TAYLOR, R.A.M.C., writes: When in York yesterday I saw the following telegrams:

"Chief of Police, Liverpool. Sapper —— states mother seriously ill. Please confirm. Capt. —— C.O. —— unit. Reply paid."

"From Chief of Police. Sapper —— confined yesterday. Both progressing favourably."

I thought that this slight touch of careless humour might be worth a corner in the JOURNAL. I did not hear whether he got the expected leave on the strength of his heroic effort.

THE following appointments of certifying factory surgeons are vacant: Shefford (Bedford), Woburn Sands (Bedford), Beaminster (Dorset), Teignmouth (Devon).

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NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.